



Disclaimer:

This document was not produced by DEQ. Some of its content may not be in an accessible format pursuant to Section 508 of the federal Rehabilitation Act of 1973, as amended (29 U.S.C. § 794 (d)). Please call 800-592-5482 if you need assistance.

# Exchange Compliance Plan 2019 Annual Update



Submitted to the  
Virginia Department of Environmental Quality  
February 1, 2019

# Contents



<b>1.</b>	<b>Introduction .....</b>	<b>1-1</b>
1.1	Purpose.....	1-1
1.2	Definitions.....	1-3
1.3	Regulatory and Non-Regulatory Information.....	1-3
1.4	Exchange Compliance Plan Content Overview.....	1-3
	Plan Summary .....	1-4
	Trading Ledger.....	1-5
	Facility Summaries and Compliance Statements .....	1-6
<b>2.</b>	<b>Potomac-Shenandoah River Basin.....</b>	<b>2-1</b>
	Supplemental Information for Individual Facilities .....	2-14
<b>3.</b>	<b>Rappahannock River Basin.....</b>	<b>3-1</b>
	Supplemental Information for Individual Facilities .....	3-14
<b>4.</b>	<b>York River Basin .....</b>	<b>4-1</b>
	Supplemental Information for Individual Facilities .....	4-14
<b>5.</b>	<b>James River Basin .....</b>	<b>5-1</b>
	Supplemental Information for Individual Facilities .....	5-18
<b>6.</b>	<b>Eastern Shore Basin .....</b>	<b>6-1</b>
	Supplemental Information for Individual Facilities .....	6-15
<b>7.</b>	<b>Credit Exchange Special Conditions .....</b>	<b>7-1</b>
7.1	Schedule of Compliance.....	7-1
	July 31, 2007 Recommendation and Procedure (Information Only).....	7-1
	Compliance Schedule Procedure under 2007 DEQ Approval Letter .....	7-2
7.2	Initial Upgrade Delays Despite Participant’s Best Efforts .....	7-2
7.3	Timely Regulatory Approvals.....	7-3
7.4	Requested Changes Resulting From Regulatory Review .....	7-3
7.5	WQIF Grant Denial.....	7-3
7.6	WQIF Credit Availability.....	7-4
7.7	Annual Updates .....	7-4
7.8	Effluent Nutrient Concentrations .....	7-4
<b>8.</b>	<b>Credit Exchange Policy .....</b>	<b>8-1</b>

## Appendices

- A DEQ Approval Letters
- B Form of Nutrient Credit Service Agreement
- C Water Quality Improvement Fund Update
- D DEQ Director Letter

## Exhibits

2-1	Nitrogen Plan Summary: Potomac-Shenandoah River Basin.....	2-2
2-2	2019 Nitrogen Trading Ledger: Potomac-Shenandoah River Basin .....	2-3
2-3	2020 Nitrogen Trading Ledger: Potomac-Shenandoah River Basin .....	2-4
2-4	2021 Nitrogen Trading Ledger: Potomac-Shenandoah River Basin .....	2-5
2-5	2022 Nitrogen Trading Ledger: Potomac-Shenandoah River Basin .....	2-6
2-6	2023 Nitrogen Trading Ledger: Potomac-Shenandoah River Basin .....	2-7
2-7	Phosphorus Plan Summary: Potomac-Shenandoah River Basin .....	2-8
2-8	2019 Phosphorus Trading Ledger: Potomac-Shenandoah River Basin.....	2-9
2-9	2020 Phosphorus Trading Ledger: Potomac-Shenandoah River Basin.....	2-10
2-10	2021 Phosphorus Trading Ledger: Potomac-Shenandoah River Basin.....	2-11
2-11	2022 Phosphorus Trading Ledger: Potomac-Shenandoah River Basin.....	2-12
2-12	2023 Phosphorus Trading Ledger: Potomac-Shenandoah River Basin.....	2-13
3-1	Nitrogen Plan Summary: Rappahannock River Basin.....	3-2
3-2	2019 Nitrogen Trading Ledger: Rappahannock River Basin .....	3-3
3-3	2020 Nitrogen Trading Ledger: Rappahannock River Basin .....	3-4
3-4	2021 Nitrogen Trading Ledger: Rappahannock River Basin .....	3-5
3-5	2022 Nitrogen Trading Ledger: Rappahannock River Basin .....	3-6
3-6	2023 Nitrogen Trading Ledger: Rappahannock River Basin .....	3-7
3-7	Phosphorus Plan Summary: Rappahannock River Basin .....	3-8
3-8	2019 Phosphorus Trading Ledger: Rappahannock River Basin.....	3-9
3-9	2020 Phosphorus Trading Ledger: Rappahannock River Basin.....	3-10
3-10	2021 Phosphorus Trading Ledger: Rappahannock River Basin.....	3-11
3-11	2022 Phosphorus Trading Ledger: Rappahannock River Basin.....	3-12
3-12	2023 Phosphorus Trading Ledger: Rappahannock River Basin.....	3-13
4-1	Nitrogen Plan Summary: York River Basin .....	4-2
4-2	2019 Nitrogen Trading Ledger: York River Basin .....	4-3
4-3	2020 Nitrogen Trading Ledger: York River Basin .....	4-4
4-4	2021 Nitrogen Trading Ledger: York River Basin .....	4-5
4-5	2022 Nitrogen Trading Ledger: York River Basin .....	4-6
4-6	2023 Nitrogen Trading Ledger: York River Basin .....	4-7
4-7	Phosphorus Plan Summary: York River Basin .....	4-8
4-8	2019 Phosphorus Trading Ledger: York River Basin.....	4-9
4-9	2020 Phosphorus Trading Ledger: York River Basin.....	4-10
4-10	2021 Phosphorus Trading Ledger: York River Basin.....	4-11
4-11	2022 Phosphorus Trading Ledger: York River Basin.....	4-12
4-12	2023 Phosphorus Trading Ledger: York River Basin.....	4-13

## Exhibits (continued)

5-1	Nitrogen Plan Summary: James River Basin.....	5-2
5-2	Nitrogen Plan Summary: Upper James River Basin .....	5-3
5-3	Nitrogen Plan Summary: Lower James River Basin .....	5-4
5-4	2019 Nitrogen Trading Ledger: James River Basin .....	5-5
5-5	2020 Nitrogen Trading Ledger: James River Basin .....	5-6
5-6	2021 Nitrogen Trading Ledger: James River Basin .....	5-7
5-7	2022 Nitrogen Trading Ledger: James River Basin .....	5-8
5-8	2023 Nitrogen Trading Ledger: James River Basin .....	5-9
5-9	Phosphorus Plan Summary: James River Basin .....	5-10
5-10	Phosphorus Plan Summary: Upper James River Basin .....	5-11
5-11	Phosphorus Plan Summary: Lower James River Basin .....	5-12
5-12	2019 Phosphorus Trading Ledger: James River Basin .....	5-13
5-13	2020 Phosphorus Trading Ledger: James River Basin .....	5-14
5-14	2021 Phosphorus Trading Ledger: James River Basin .....	5-15
5-15	2022 Phosphorus Trading Ledger: James River Basin .....	5-16
5-16	2023 Phosphorus Trading Ledger: James River Basin .....	5-17
6-1	Nitrogen Plan Summary: Eastern Shore Basin .....	6-3
6-2	2019 Nitrogen Trading Ledger: Eastern Shore Basin .....	6-4
6-3	2020 Nitrogen Trading Ledger: Eastern Shore Basin .....	6-5
6-4	2021 Nitrogen Trading Ledger: Eastern Shore Basin .....	6-6
6-5	2022 Nitrogen Trading Ledger: Eastern Shore Basin .....	6-7
6-6	2023 Nitrogen Trading Ledger: Eastern Shore Basin .....	6-8
6-7	Phosphorus Plan Summary: Eastern Shore Basin .....	6-9
6-8	2019 Phosphorus Trading Ledger: Eastern Shore Basin .....	6-10
6-9	2020 Phosphorus Trading Ledger: Eastern Shore Basin .....	6-11
6-10	2021 Phosphorus Trading Ledger: Eastern Shore Basin .....	6-12
6-11	2022 Phosphorus Trading Ledger: Eastern Shore Basin .....	6-13
6-12	2023 Phosphorus Trading Ledger: Eastern Shore Basin .....	6-14



## SECTION 1

# Introduction



## 1.1 Purpose

This Chesapeake Bay Nutrient Credit Exchange Program Compliance Plan 2019 Annual Update (“Exchange Compliance Plan”) was prepared by the Virginia Nutrient Credit Exchange Association, Inc. (“The Exchange”) in collaboration with participating owners of regulated facilities (“Participants”). This Exchange Compliance Plan updates and supersedes the Exchange Compliance Plan 2018 Annual Update, which was submitted by The Exchange to the Virginia Department of Environmental Quality (“DEQ”) on February 1, 2018. The original Exchange Compliance Plan was submitted by The Exchange to DEQ on July 31, 2007 and approved by DEQ by letter dated September 7, 2007. Similarly, the Annual Updates for each year from 2008 through 2018 were all submitted to DEQ in a timely manner and were subsequently approved by DEQ. All DEQ approval letters are attached at Appendix A.

This Exchange Compliance Plan continues a “realistically aggressive” program of work to meet the nitrogen and phosphorus waste load allocations of the Participants’ facilities. This Exchange Compliance Plan utilizes voluntary, market-based nutrient credit trading as a means of achieving compliance more cost-effectively and more expeditiously than would otherwise be possible. It is grounded in the 20-plus year history of policy development by the U.S. Environmental Protection Agency (“EPA”) and the Chesapeake Bay Program (“CBP”) regional partnership recognizing pollutant credit trading as a useful tool for advancing water quality protection programs. Supporting national and regional policy is set forth in:

- EPA Effluent Trading In Watersheds Policy (1996)
- Draft Framework for Watershed-Based Trading (1996)
- CBP Nutrient Trading Fundamental Principles and Guidelines (2001)
- EPA Water Quality Trading Policy (2003)
- EPA Permit Writers Toolkit for Trading (2007)
- EPA Chesapeake Bay Total Maximum Daily Load (2010)

Specific authorization and detailed requirements for the Virginia Nutrient Credit Exchange Program were first enacted during the 2005 Session of the General Assembly. The program has been expanded by legislation numerous times since 2005. Particularly notable expansion legislation was enacted in 2012 (expanding nutrient credit use by regulated entities to include municipal stormwater permittees, construction stormwater permittees, industrial stormwater permittees, and concentrated animal feeding operations) and 2016 (expanding offset authorities and options for new or increased discharges, and expanding credit use by municipal stormwater permittees to include sediment credits). In addition, the State Water Control Board and DEQ have issued implementation regulations and guidance on numerous occasions since 2005. Key statutory and regulatory references include:

- Chesapeake Bay Watershed Nutrient Credit Exchange Program, Va. Code § 62.1-44.19:12 et seq. (2005, as amended)

- Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed, 9 VAC 25-40 (2005)
- General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia, 9 VAC 25-820-70 (2006, as amended or reissued from time to time) (“General Permit”)
- DEQ Guidance Memo No. 07-2008, Amendment No. 2: Permitting Considerations for Facilities in the Chesapeake Bay Watershed (2007)
- DEQ Addendum No. 1 to Guidance Memo No. 07-2008, Amendment No. 2: Permitting Considerations for Facilities in the Chesapeake Bay Watershed (2009)
- Virginia Chesapeake Bay TMDL Phase I Watershed Implementation Plan (2010)
- Virginia Chesapeake Bay TMDL Phase II Watershed Implementation Plan (2012)

The initial focus of the Exchange Compliance Plan was on the construction of a large number of nutrient removal technology upgrades at Participants’ facilities to achieve compliance with the new Chesapeake Bay nitrogen and phosphorus waste load allocations adopted by the State Water Control Board. Once initial compliance was achieved through this construction program (Compliance Year 2011), the focus shifted to maintaining compliance through an ongoing program of additional facility upgrades over time as is now occurring.

At present, as provided for under the EPA Chesapeake Bay TMDL (Appendix X) and Virginia Phase I Watershed Implementation Plan, DEQ is undertaking a comprehensive study of existing James River Site-specific numeric Chlorophyll-a criteria assessment method and the associated modelling framework. The outcome of this study is expected to be used to determine final nutrient allocation for the James River basin. In the meantime, the James River allocations are stringently regulated pursuant to the 2005 Virginia allocations as modified by the 2010 EPA Chesapeake Bay TMDL Stage 1A and 1B additional reductions.

This document serves two primary purposes. First, certain information contained herein is submitted on behalf of the Participants in satisfaction of each Participant’s regulatory obligation under Part I.D. of the General Permit (9 VAC 25-820-70 Part I.D), which states:

**Annual update of compliance plan.** Every owner of a facility required to submit a registration statement shall either individually or through the Virginia Nutrient Credit Exchange Association submit updated compliance plans to the department no later than February 1 of each year. The compliance plans shall contain sufficient information to document a plan to achieve and maintain compliance with applicable total nitrogen and total phosphorus individual waste load allocations on the registration list and aggregate waste load allocations in Part I C 3. Compliance plans for owners of facilities that were required to submit a registration statement with the department under Part I G 1 a may rely on the acquisition of point source credits in accordance with Part I J of this general permit, but not the acquisition of credits through payments into the Nutrient Offset Fund, to achieve compliance with the individual and combined waste load allocations in each tributary. Compliance plans for expansions or new discharges for owners of facilities that are required to submit a registration statement with the department under Part I G 1 b and c may rely on the acquisition of allocation in accordance with Part II B of this general permit to achieve compliance with the individual and combined waste load allocations in each tributary.

The second purpose of this Exchange Compliance Plan is to serve as a comprehensive document for planning and implementing nutrient credit trading at the basin level through The Exchange. The Exchange is a not-for-profit, voluntary association of owners of regulated facilities that serves as a facilitator of nutrient trading among its members as provided in Virginia Code section 62.1-44.19:17.

## 1.2 Definitions

The terms used in this Exchange Compliance Plan shall have the same definitions as set forth in The Exchange's Credit Exchange Policy for the Purchase and Sale of Chesapeake Bay Nutrient Credits, which is set forth in Section 8.

Any terms not defined in the Credit Exchange Policy shall have the same definition as provided in 9 VAC 25-820-10, unless a different meaning is intended by the usage herein.

The term "Declared Load", which appears on the river basin graphs, means the maximum delivered load that a facility can discharge and still meet its commitments to either supply or purchase Class A Credits. For a Class A Seller, Declared Load equals Delivered WLA minus Class A Credits supplied. For a Class A Buyer, Declared Load equals Delivered WLA plus Class A Credits purchased. For a Participant that is neither a Class A Seller nor a Class A Buyer (i.e., a Neutral Participant), Declared Load equals Delivered WLA.

## 1.3 Regulatory and Non-Regulatory Information

As mentioned above, the Exchange Compliance Plan serves a dual purpose. Certain information set forth herein is required by the General Permit. This regulatory information is provided (1) in the Compliance Statements for facilities subject to reduced waste load allocations in the James River basin and (2) in Section 7 of the Exchange Compliance Plan.

Additional information set forth herein is beyond that required by regulation and is not submitted for review and approval as such. This additional information, i.e., non-regulatory information, is presented for the efficiency of gaining multiple uses of a single, more comprehensive document for effective planning by The Exchange and the Participants. Non-regulatory information includes but is not limited to: design flow; projections of actual flow, concentration, load and Credits; future capital projects; Preliminary Use of Credits; detailed trading ledgers for projections; The Exchange's Credit Exchange Policy (including its Credit Price Schedule) (Section 8); and a summary and projection of needs for and availability of WQIF grant funding, which is an essential funding source for many of the planned facility upgrades discussed herein (Appendix C).

## 1.4 Exchange Compliance Plan Content Overview

The Exchange Compliance Plan contains a separate section for each tributary, or basin, as follows:

- Section 2 – Potomac-Shenandoah River Basin
- Section 3 – Rappahannock River Basin
- Section 4 – York River Basin



- Section 5 – James River Basin
- Section 6 – Eastern Shore Basin

The Trading Optimization Model, previously described in The Exchange’s written materials and presentations, was used to generate a plan illustrating nutrient removal projects, Credit generation and Credit exchanges in each basin. Schedules and results are based on owner-provided facility-specific data. The organization and description of the Exchange Compliance Plan components is summarized below.

The Exchange Compliance Plan for the James River basin distinguishes between the James “Upper” and James “Lower” basins. This manner of presentation is convenient in that it (1) simplifies the analysis of the James River exchanges and (2) clearly demonstrates that the partial, one-way restriction on James River trading is met (i.e., facilities in the areas previously identified as upper and middle portions of the basin are not proposing to acquire any Credits generated by facilities in the lower basin). Notwithstanding this two-part presentation, facilities in the lower portion may obtain Credits from upstream facilities. In the future, Class A Credit exchanges may be specified in a plan update. Similarly, Credits may be exchanged from the Upper James to the Lower James during any Reconciliation Year as needed. Therefore, despite the distinction between the Upper and Lower portions of the James River basin herein, the basin continues to be viewed and managed as a single unit consistent with applicable regulations.

## Plan Summary

The Plan Summary is a visual synopsis of each basin. Separate summaries are presented for nitrogen and phosphorus.

For Class A Credit management purposes, the Plan Summary compares the “Declared Load” to the Delivered WLA for all Participants for an 8-year period (currently, through the year 2026). The Declared Load illustration represents the Class A Credit trading positions of Participant facilities. Because Declared Load is a Class A Credit concept, it excludes—by definition—forecasted Class B Credits and thereby tends to overstate the forecasted actual load, which is addressed by the “Expected Load” discussed below.

For overall compliance purposes and The Exchange’s broader management purposes, the Plan Summary also illustrates Expected Load, which is a forecast of the aggregate load of all Participant facilities. In contrast to the Declared Load line, the Expected Load line intentionally ignores the Class A Credit sales decisions of individual Participants and thereby takes into account all Credits projected to be generated by Participants prior to adjustments for Preliminary Use of Credits. In this respect, the Expected Load line is not representative of Class A Credit commitments that Participants in The Exchange’s voluntary, market-based program have decided to make. However, it does illustrate projected aggregate performance and more comprehensively reflects the favorable nutrient reduction trends of The Exchange as a whole.

Also for The Exchange’s management purposes, green or brown bars at the bottom of the Plan Summary chart are plotted against the secondary Y-axis and represent Class A Credit supplies that exceed Class A Credit requests for a given Compliance Year.

## Trading Ledger

Each basin's nutrient section presents annual trading ledgers for 2019 through 2023. For each Participant, the Expected Load, Expected Credits, Expected Net Credits, Class A Credit sales, and Class A Credit purchases are presented. The ledger also accounts for projected Class B Credits. Where Class A Credit purchases are not projected to be satisfied using only Class A Credit sales, a portion of each Buyer's demand is anticipated to be satisfied on a pro rata basis using Class B Credits. Aggregate basin information is shown in the blue bar at the top of the ledger.

Based on the number of Credits projected in each market, Class A Credit and Class B Credit sales prices are estimated in accordance with the Credit Exchange Policy. These prices, which include the Class A Buyer price, are displayed at the top of the trading ledger. Since The Exchange "clears the market" by purchasing all Credits generated by Participants as provided in the Credit Exchange Policy, the Class A Seller price reflects the difference between the volume of Credits supplied and the volume of credits purchased in the Class A market.

Where multiple facilities under common ownership or operation have been "bubbled" at the Participant's election pursuant to 9 VAC 25-820-70 Part I.B.2, these facilities are listed in order and highlighted in light blue (and pale yellow, if more than one bubble exists in a consecutive alphabetical listing of Participants/Facilities).

Where a participating facility has provided advance notice of a Private Exchange pursuant to Section 4.9 of the Credit Exchange Policy, an estimate of the amount of Credits to be exchanged is noted as a Preliminary Use of Credits on the applicable Trading Ledger. As of this time, Participants have given notice of the following Private Exchanges factored into this Exchange Compliance Plan:

### **Potomac**

Arlington County WWTP and Arlington County MS4 (Nitrogen/Phosphorus)  
Arlington County WWTP and George Mason University (Nitrogen/Phosphorus)  
Arlington County WWTP and Arlington Co Public Schools MS4 (Nitrogen/Phosphorus)  
Fairfax-Noman Cole WWTP and Fairfax Co Department of Vehicle Services (Nitrogen)  
HRRSA-North River and City of Harrisonburg MS4 (Nitrogen/Phosphorus)  
PWCSA-H.L. Mooney and Prince William County MS4 (Nitrogen/Phosphorus)  
Town of Leesburg and Loudoun Milling (Nitrogen/Phosphorus)  
Town of Luray WWTP and Town of Luray MS4 (Phosphorus)  
UOSA and UOSA Member Jurisdiction MS4s (Nitrogen/Phosphorus)

### **Rappahannock**

Omega Protein and Children's Bible Ministries of Virginia, Inc. (Nitrogen/Phosphorus)

### **York**

Hanover County and Hanover County MS4 (Nitrogen)  
HRSD and Member Jurisdiction MS4s (Nitrogen/Phosphorus)  
HRSD and Department of Energy-Jefferson Lab (Nitrogen)

### **James**

AdvanSix-Hopewell and Hopewell RWTF (Nitrogen)

Chesterfield County and South Central Wastewater Authority (Nitrogen/Phosphorus)  
Chesterfield County and Dominion-Chesterfield (Nitrogen/Phosphorus)  
HRSD and Member Jurisdiction MS4s (Nitrogen/Phosphorus)  
HRSD and Department of Energy-Jefferson Lab (Nitrogen/Phosphorus)  
City of Lynchburg WWTP and City of Lynchburg MS4 (Nitrogen)  
RWSA-Moores Creek and Ryder Enterprises (Nitrogen/Phosphorus)

**Eastern Shore**

Tangier Island and Tyson Foods (Nitrogen/Phosphorus)

In certain instances, a listed Private Exchange may include terms that are not readily capable of representation within The Exchange's uniform basis and facility-level formats used herein; notwithstanding that formatting limitation, it is the intent of The Exchange to fully accommodate the terms of such Private Exchanges for which Participants have given proper notice.

## **Facility Summaries and Compliance Statements**

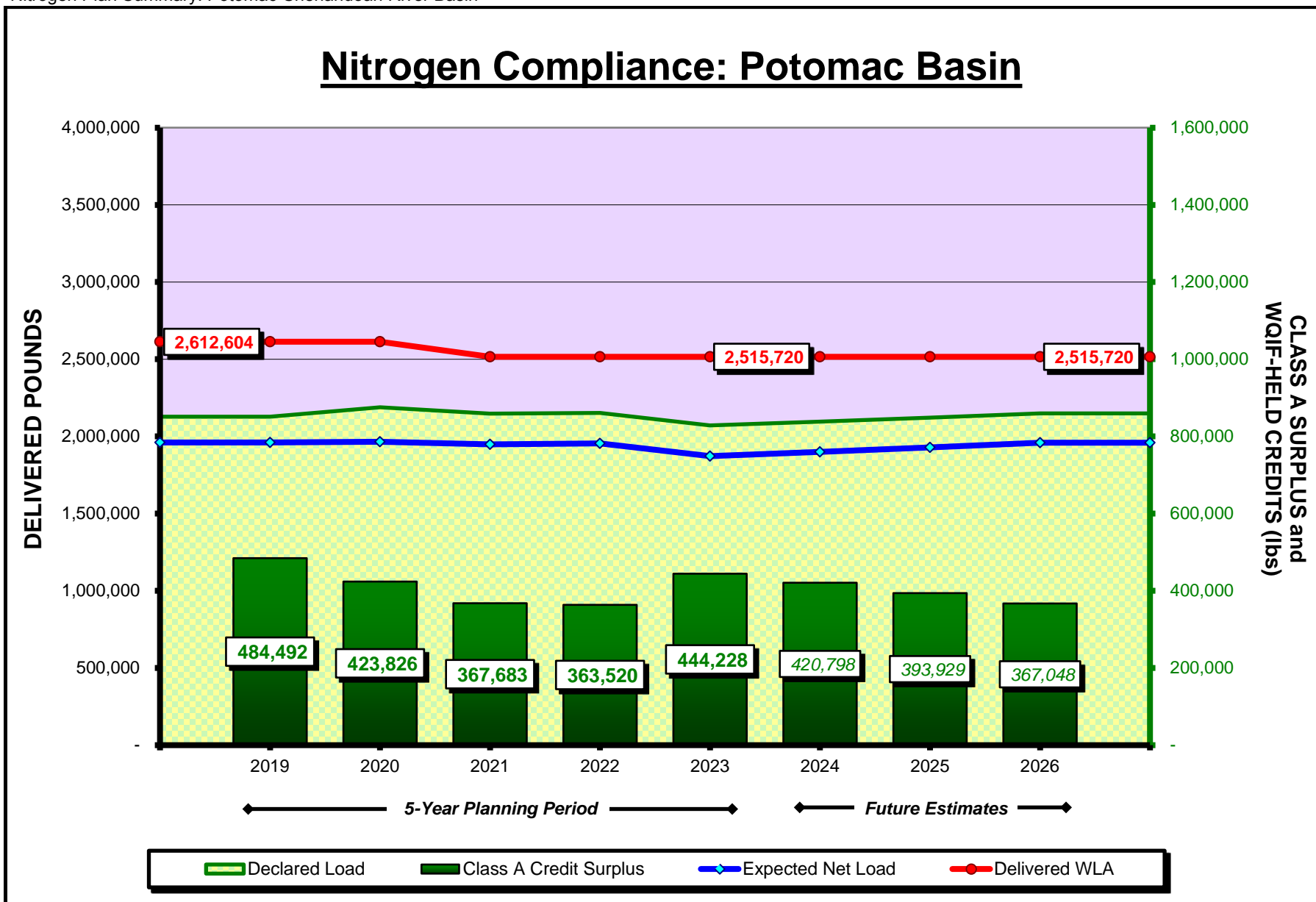
For each basin, facility-specific information is included immediately following the Trading Ledger. This includes Facility Summaries for Nitrogen and for Phosphorus for each facility. For facilities with reduced waste load allocations pursuant to the Chesapeake Bay TMDL, a Compliance Statement is provided with additional information with respect to the timing and manner of achieving compliance.

Development of each Annual Update of the Exchange Compliance Plan requires data collection from Participants on a schedule that provides The Exchange and its advisors adequate time to collect and compile data covering over 100 facilities. The timeline for such data collection is governed by the Nutrient Credit Services Agreement between The Exchange and each Participant. A copy of the agreement is provided as Appendix B hereto. Consequently, the data contained in the Facility Summaries and Compliance Statements was collected approximately five months in advance of submittal of the Annual Update to DEQ and generally would not reflect changed circumstances at the facility level, if any, subsequent to data collection. Data changes subsequent to data collection, if any, would be reflected in the next Annual Update.

SECTION 2

# Potomac-Shenandoah River Basin Exchange Compliance Plan





## POTOMAC Basin: Nitrogen Credit Ledger

Compliance Year:	2019	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.08	\$ 3.82	\$ 0.02
The Exchange (group)	2,612,604	1,932,970	679,634	-	(2,924)	(24,365)	652,345		496,157	(11,665)	167,853
ACSA-Fishersville	4,873	1,900	2,973	(2,973)	-	-	-		-	-	-
ACSA-Greenville	1,424	512	912	(479)	-	-	433		433	-	-
ACSA-Harriston	1,025	209	816	(816)	-	-	-		-	-	-
ACSA-Middle River	8,284	3,877	4,407	-	-	-	4,407		4,407	-	-
ACSA-Mt. Sidney	854	1,346	(492)	492	-	-	-		-	-	-
ACSA-Stuarts Draft	2,436	606	1,830	-	-	-	1,830		1,830	-	-
ACSA-Vesper View	1,025	563	462	(462)	-	-	-		-	-	-
ACSA-Weyers Cave	1,462	5,700	(4,238)	4,238	-	-	-		-	-	-
Alexandria Renew Ent.	493,381	371,223	122,158	-	-	-	122,158		91,620	-	30,538
Arlington Co.	365,284	237,554	127,730	-	(2,625)	-	125,105		125,105	-	-
Berryville	5,373	3,377	1,996	-	-	-	1,996		1,900	-	96
Broadway Regional	5,601	4,719	882	-	-	-	882		-	-	882
Fairfax Co-Noman Cole	612,158	470,822	141,336	-	(25)	-	141,311		127,128	-	14,183
FCWSA-Vint Hill	579	244	335	-	-	-	335		-	-	335
Front Royal	29,725	25,359	4,366	-	-	-	4,366		4,000	-	366
FWSA-Opequon	31,681	17,183	14,498	-	-	-	14,498		-	-	14,498
FWSA-Parkins Mill	15,837	6,533	9,304	-	-	-	9,304		-	-	9,304
HRRSA-North River	55,746	38,191	17,555	-	-	-	17,555		15,000	-	2,555
KGCSA-Dahlgren S.D.	9,137	5,025	4,112	(427)	-	-	3,685		-	-	3,685
KGCSA-Fairview Beach	1,827	731	1,096	-	-	-	1,096		-	-	1,096
KGCSA-Purkins Corner	1,096	1,523	(427)	427	-	-	-		-	-	-
Leesburg	97,458	32,898	64,560	-	(274)	(24,365)	39,921		-	-	39,921
Loudoun Water- Broad Run	119,264	48,953	70,311	-	-	-	70,311		57,884	-	12,427
Luray	8,187	2,533	5,654	-	-	-	5,654		5,654	-	-
Massanutten PSC	6,030	2,975	3,055	-	-	-	3,055		-	-	3,055
Merck	4,824	14,473	(9,649)	-	-	-	(9,649)		-	(9,649)	-
MillerCoors LLC	18,091	18,091	-	-	-	-	-		-	-	-
Mt. Jackson	2,900	2,237	663	-	-	-	663		-	-	663
Purcellville	13,157	7,894	5,263	-	-	-	5,263		2,632	-	2,631
PWCSA-HL Mooney	219,280	178,165	41,115	-	-	-	41,115		28,781	-	12,334
Stafford Co-Aquia	73,093	67,063	6,030	-	-	-	6,030		4,462	-	1,568
Stoney Creek	2,891	2,814	77	-	-	-	77		-	-	77
Strasburg	5,134	6,548	(1,414)	-	-	-	(1,414)		-	(2,016)	602
UOSA	302,607	300,006	2,601	-	-	-	2,601		-	-	2,601
VA Am. Water PW Sec. 1	42,029	23,984	18,045	-	-	-	18,045		10,827	-	7,218
VA Am. Water PW Sec. 8	42,029	23,984	18,045	-	-	-	18,045		10,827	-	7,218
Waynesboro	6,822	3,155	3,667	-	-	-	3,667		3,667	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**



## POTOMAC Basin: Nitrogen Credit Ledger

Compliance Year:		2020		Credit Forecasts		Preliminary Use of Credits		Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.09	\$ 3.86	\$ 0.02
The Exchange (group)	2,612,604	1,937,473	675,131	-	(2,924)	(24,365)	647,842		435,531	(11,705)	224,016
ACSA-Fishersville	4,873	1,957	2,916	(2,916)	-	-	-		-	-	-
ACSA-Greenville	1,424	527	897	(771)	-	-	126		126	-	-
ACSA-Harriston	1,025	216	809	(809)	-	-	-		-	-	-
ACSA-Middle River	8,284	3,994	4,290	-	-	-	4,290		4,290	-	-
ACSA-Mt. Sidney	854	1,386	(532)	532	-	-	-		-	-	-
ACSA-Stuarts Draft	2,436	624	1,812	-	-	-	1,812		1,812	-	-
ACSA-Vesper View	1,025	580	445	(445)	-	-	-		-	-	-
ACSA-Weyers Cave	1,462	5,871	(4,409)	4,409	-	-	-		-	-	-
Alexandria Renew Ent.	493,381	375,061	118,320	-	-	-	118,320		-	-	118,320
Arlington Co.	365,284	242,122	123,162	-	(2,625)	-	120,537		120,537	-	-
Berryville	5,373	3,223	2,150	-	-	-	2,150		2,100	-	50
Broadway Regional	5,601	4,780	821	-	-	-	821		-	-	821
Fairfax Co-Noman Cole	612,158	456,755	155,403	-	(25)	-	155,378		155,324	-	54
FCWSA-Vint Hill	579	256	323	-	-	-	323		-	-	323
Front Royal	29,725	25,415	4,310	-	-	-	4,310		4,000	-	310
FWSA-Opequon	31,681	17,959	13,722	-	-	-	13,722		-	-	13,722
FWSA-Parkins Mill	15,837	7,364	8,473	-	-	-	8,473		-	-	8,473
HRRSA-North River	55,746	38,191	17,555	-	-	-	17,555		15,000	-	2,555
KGCSA-Dahlgren S.D.	9,137	5,482	3,655	(427)	-	-	3,228		-	-	3,228
KGCSA-Fairview Beach	1,827	822	1,005	-	-	-	1,005		-	-	1,005
KGCSA-Purkins Corner	1,096	1,523	(427)	427	-	-	-		-	-	-
Leesburg	97,458	34,535	62,923	-	(274)	(24,365)	38,284		-	-	38,284
Loudoun Water- Broad Run	119,264	52,747	66,517	-	-	-	66,517		66,517	-	-
Luray	8,187	2,533	5,654	-	-	-	5,654		5,654	-	-
Massanutten PSC	6,030	3,055	2,975	-	-	-	2,975		-	-	2,975
Merck	4,824	14,473	(9,649)	-	-	-	(9,649)		-	(9,649)	-
MillerCoors LLC	18,091	18,091	-	-	-	-	-		-	-	-
Mt. Jackson	2,900	2,278	622	-	-	-	622		-	-	622
Purcellville	13,157	8,333	4,824	-	-	-	4,824		2,412	-	2,412
PWCSA-HL Mooney	219,280	180,449	38,831	-	-	-	38,831		27,182	-	11,649
Stafford Co-Aquia	73,093	67,063	6,030	-	-	-	6,030		5,427	-	603
Stoney Creek	2,891	2,814	77	-	-	-	77		-	-	77
Strasburg	5,134	6,613	(1,479)	-	-	-	(1,479)		-	(2,056)	577
UOSA	302,607	299,087	3,520	-	-	-	3,520		-	-	3,520
VA Am. Water PW Sec. 1	42,029	23,984	18,045	-	-	-	18,045		10,827	-	7,218
VA Am. Water PW Sec. 8	42,029	23,984	18,045	-	-	-	18,045		10,827	-	7,218
Waynesboro	6,822	3,326	3,496	-	-	-	3,496		3,496	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## POTOMAC Basin: Nitrogen Credit Ledger

Compliance Year:	2021	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.07	\$ 3.87	\$ 0.01
The Exchange (group)	2,515,720	1,925,601	590,119	-	(2,924)	(19,492)	567,703		375,337	(7,654)	200,020
ACSA-Fishersville	2,924	1,209	1,715	(1,715)	-	-	-		-	-	-
ACSA-Greenville	854	303	551	(425)	-	-	126		126	-	-
ACSA-Harriston	626	136	490	-	-	-	490		490	-	-
ACSA-Middle River	4,970	2,468	2,502	-	-	-	2,502		2,502	-	-
ACSA-Mt. Sidney	513	864	(351)	351	-	-	-		-	-	-
ACSA-Stuarts Draft	1,462	386	1,076	(1,076)	-	-	-		-	-	-
ACSA-Vesper View	626	338	288	-	-	-	288		288	-	-
ACSA-Weyers Cave	914	3,779	(2,865)	2,865	-	-	-		-	-	-
Alexandria Renew Ent.	493,381	375,061	118,320	-	-	-	118,320		-	-	118,320
Arlington Co.	365,284	246,690	118,594	-	(2,625)	-	115,969		115,969	-	-
Berryville	4,435	2,661	1,774	-	-	-	1,774		1,650	-	124
Broadway Regional	3,538	3,057	481	-	-	-	481		-	-	481
Fairfax Co-Norman Cole	612,158	488,547	123,611	-	(25)	-	123,586		123,528	-	58
FCWSA-Vint Hill	579	268	311	-	-	-	311		-	-	311
Front Royal	24,365	20,832	3,533	-	-	-	3,533		3,200	-	333
FWSA-Opequon	25,589	15,043	10,546	-	-	-	10,546		-	-	10,546
FWSA-Parkins Mill	12,791	6,428	6,363	-	-	-	6,363		-	-	6,363
HRRSA-North River	35,475	24,628	10,847	-	-	-	10,847		4,600	-	6,247
KGCSA-Dahlgren S.D.	9,137	4,568	4,569	(1,508)	-	-	3,061		2,800	-	261
KGCSA-Fairview Beach	1,827	1,462	365	-	-	-	365		300	-	65
KGCSA-Purkins Corner	1,096	2,604	(1,508)	1,508	-	-	-		-	-	-
Leesburg	77,966	29,541	48,425	-	(274)	(19,492)	28,659		-	-	28,659
Loudoun Water- Broad Run	109,884	53,231	56,653	-	-	-	56,653		56,653	-	-
Luray	6,432	1,990	4,442	-	-	-	4,442		4,442	-	-
Massanutten PSC	4,020	2,037	1,983	-	-	-	1,983		-	-	1,983
Merck	3,216	9,648	(6,432)	-	-	-	(6,432)		-	(6,432)	-
MillerCoors LLC	12,060	12,060	-	-	-	-	-		-	-	-
Mt. Jackson	2,132	1,675	457	-	-	-	457		-	-	457
Purcellville	8,406	6,164	2,242	-	-	-	2,242		1,121	-	1,121
PWCSA-HL Mooney	219,280	181,363	37,917	-	-	-	37,917		28,438	-	9,479
Stafford Co-Aquia	73,093	67,063	6,030	-	-	-	6,030		5,427	-	603
Stoney Creek	2,065	1,865	200	-	-	-	200		200	-	-
Strasburg	4,059	5,281	(1,222)	-	-	-	(1,222)		-	(1,222)	-
UOSA	302,607	302,434	173	-	-	-	173		-	-	173
VA Am. Water PW Sec. 1	42,029	23,984	18,045	-	-	-	18,045		10,827	-	7,218
VA Am. Water PW Sec. 8	42,029	23,984	18,045	-	-	-	18,045		10,827	-	7,218
Waynesboro	3,898	1,949	1,949	-	-	-	1,949		1,949	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## POTOMAC Basin: Nitrogen Credit Ledger

Compliance Year:	2022	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.07	\$ 3.94	\$ 0.01
The Exchange (group)	2,515,720	1,930,908	584,812	-	(3,765)	(19,492)	561,555		371,226	(7,706)	198,035
ACSA-Fishersville	2,924	1,169	1,755	(1,755)	-	-	-		-	-	-
ACSA-Greenville	854	337	517	(517)	-	-	-		-	-	-
ACSA-Harriston	626	151	475	(56)	-	-	419		419	-	-
ACSA-Middle River	4,970	2,577	2,393	-	-	-	2,393		2,393	-	-
ACSA-Mt. Sidney	513	895	(382)	382	-	-	-		-	-	-
ACSA-Stuarts Draft	1,462	389	1,073	(1,073)	-	-	-		-	-	-
ACSA-Vesper View	626	360	266	-	-	-	266		266	-	-
ACSA-Weyers Cave	914	3,933	(3,019)	3,019	-	-	-		-	-	-
Alexandria Renew Ent.	493,381	375,061	118,320	-	-	-	118,320		-	-	118,320
Arlington Co.	365,284	242,122	123,162	-	(2,625)	-	120,537		120,537	-	-
Berryville	4,435	2,597	1,838	-	-	-	1,838		1,300	-	538
Broadway Regional	3,538	3,096	442	-	-	-	442		-	-	442
Fairfax Co-Noman Cole	612,158	491,188	120,970	-	(25)	-	120,945		120,945	-	-
FCWSA-Vint Hill	579	280	299	-	-	-	299		-	-	299
Front Royal	24,365	20,832	3,533	-	-	-	3,533		3,200	-	333
FWSA-Opequon	25,589	13,911	11,678	-	-	-	11,678		-	-	11,678
FWSA-Parkins Mill	12,791	6,907	5,884	-	-	-	5,884		-	-	5,884
HRRSA-North River	35,475	24,628	10,847	-	(1,115)	-	9,732		4,600	-	5,132
KGCSA-Dahlgren S.D.	9,137	4,568	4,569	(1,508)	-	-	3,061		2,800	-	261
KGCSA-Fairview Beach	1,827	1,462	365	-	-	-	365		300	-	65
KGCSA-Purkins Corner	1,096	2,604	(1,508)	1,508	-	-	-		-	-	-
Leesburg	77,966	30,878	47,088	-	-	(19,492)	27,596		-	-	27,596
Loudoun Water- Broad Run	109,884	57,339	52,545	-	-	-	52,545		52,545	-	-
Luray	6,432	1,990	4,442	-	-	-	4,442		4,442	-	-
Massanutten PSC	4,020	2,037	1,983	-	-	-	1,983		-	-	1,983
Merck	3,216	9,648	(6,432)	-	-	-	(6,432)		-	(6,432)	-
MillerCoors LLC	12,060	12,060	-	-	-	-	-		-	-	-
Mt. Jackson	2,132	1,706	426	-	-	-	426		-	-	426
Purcellville	8,406	6,500	1,906	-	-	-	1,906		953	-	953
PWCSA-HL Mooney	219,280	182,277	37,003	-	-	-	37,003		27,752	-	9,251
Stafford Co-Aquia	73,093	67,063	6,030	-	-	-	6,030		5,427	-	603
Stoney Creek	2,065	1,865	200	-	-	-	200		200	-	-
Strasburg	4,059	5,333	(1,274)	-	-	-	(1,274)		-	(1,274)	-
UOSA	302,607	302,468	139	-	-	-	139		-	-	139
VA Am. Water PW Sec. 1	42,029	24,364	17,665	-	-	-	17,665		10,599	-	7,066
VA Am. Water PW Sec. 8	42,029	24,364	17,665	-	-	-	17,665		10,599	-	7,066
Waynesboro	3,898	1,949	1,949	-	-	-	1,949		1,949	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

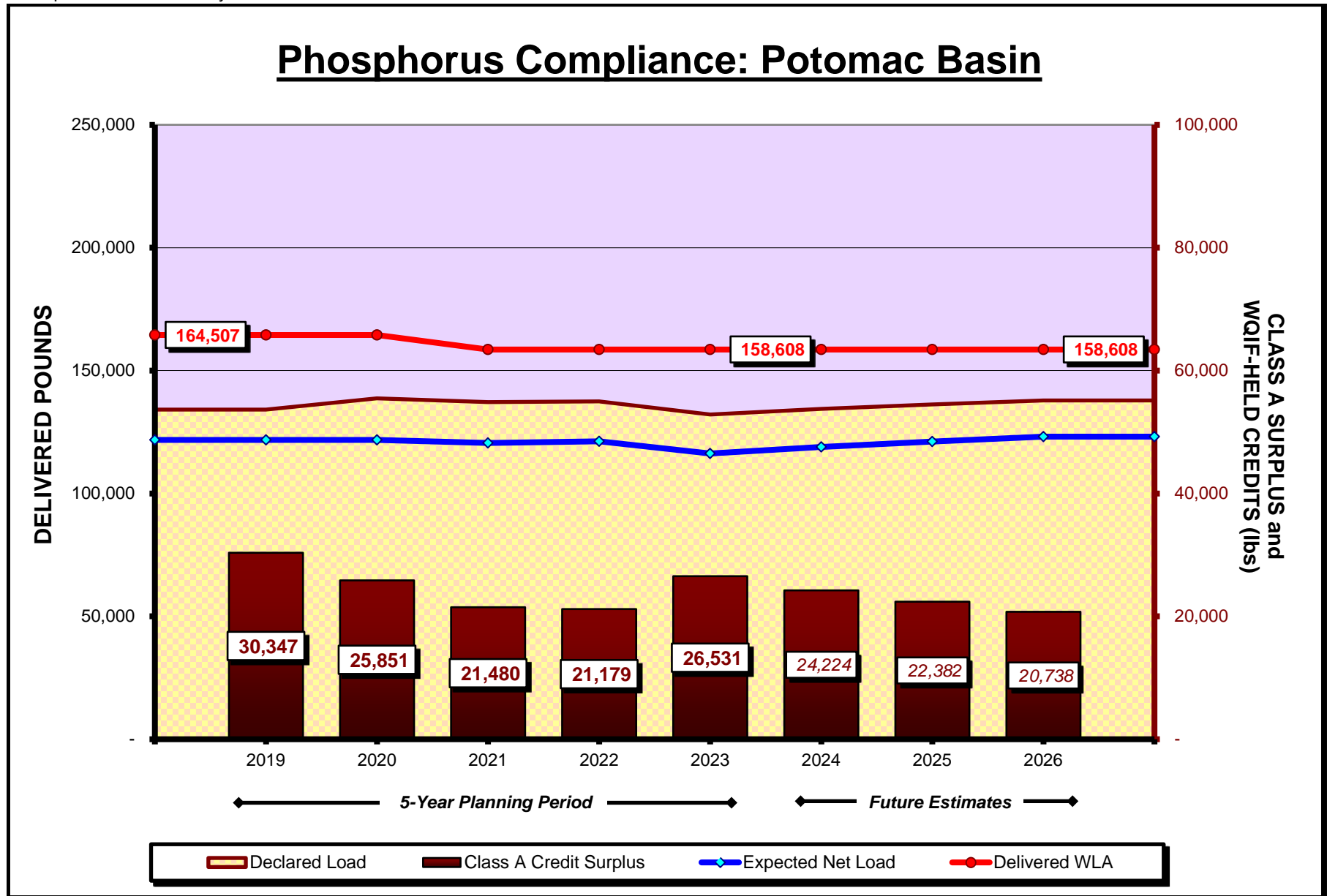
**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## POTOMAC Basin: Nitrogen Credit Ledger

Compliance Year:		2023		Credit Forecasts		Preliminary Use of Credits		Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.06	\$ 4.04	\$ 0.01
The Exchange (group)	2,515,720	1,848,712	667,008	-	(4,466)	(19,492)	643,050		451,986	(7,758)	198,822
ACSA-Fishersville	2,924	1,177	1,747	(1,747)	-	-	-		-	-	-
ACSA-Greenville	854	351	503	-	-	-	503		503	-	-
ACSA-Harriston	626	104	522	-	-	-	522		522	-	-
ACSA-Middle River	4,970	2,478	2,492	-	-	-	2,492		2,492	-	-
ACSA-Mt. Sidney	513	716	(203)	203	-	-	-		-	-	-
ACSA-Stuarts Draft	1,462	370	1,092	(811)	-	-	281		281	-	-
ACSA-Vesper View	626	434	192	-	-	-	192		192	-	-
ACSA-Weyers Cave	914	3,269	(2,355)	2,355	-	-	-		-	-	-
Alexandria Renew Ent.	493,381	375,061	118,320	-	-	-	118,320		-	-	118,320
Arlington Co.	365,284	242,122	123,162	-	(3,326)	-	119,836		119,836	-	-
Berryville	4,435	2,661	1,774	-	-	-	1,774		1,250	-	524
Broadway Regional	3,538	3,134	404	-	-	-	404		-	-	404
Fairfax Co-Noman Cole	612,158	402,653	209,505	-	(25)	-	209,480		209,480	-	-
FCWSA-Vint Hill	579	292	287	-	-	-	287		-	-	287
Front Royal	24,365	20,832	3,533	-	-	-	3,533		3,200	-	333
FWSA-Opequon	25,589	14,390	11,199	-	-	-	11,199		-	-	11,199
FWSA-Parkins Mill	12,791	7,195	5,596	-	-	-	5,596		-	-	5,596
HRRSA-North River	35,475	25,276	10,199	-	(1,115)	-	9,084		4,500	-	4,584
KGCSA-Dahlgren S.D.	9,137	4,568	4,569	(1,797)	-	-	2,772		2,200	-	572
KGCSA-Fairview Beach	1,827	1,462	365	-	-	-	365		-	-	365
KGCSA-Purkins Corner	1,096	2,893	(1,797)	1,797	-	-	-		-	-	-
Leesburg	77,966	32,873	45,093	-	-	(19,492)	25,601		-	-	25,601
Loudoun Water- Broad Run	109,884	60,224	49,660	-	-	-	49,660		49,660	-	-
Luray	6,432	1,990	4,442	-	-	-	4,442		4,442	-	-
Massanutten PSC	4,020	2,037	1,983	-	-	-	1,983		-	-	1,983
Merck	3,216	9,648	(6,432)	-	-	-	(6,432)		-	(6,432)	-
MillerCoors LLC	12,060	12,060	-	-	-	-	-		-	-	-
Mt. Jackson	2,132	1,706	426	-	-	-	426		-	-	426
Purcellville	8,406	6,837	1,569	-	-	-	1,569		785	-	784
PWCSA-HL Mooney	219,280	183,190	36,090	-	-	-	36,090		24,363	-	11,727
Stafford Co-Aquia	73,093	68,160	4,933	-	-	-	4,933		4,933	-	-
Stoney Creek	2,065	1,865	200	-	-	-	200		200	-	-
Strasburg	4,059	5,385	(1,326)	-	-	-	(1,326)		-	(1,326)	-
UOSA	302,607	300,622	1,985	-	-	-	1,985		-	-	1,985
VA Am. Water PW Sec. 1	42,029	24,364	17,665	-	-	-	17,665		10,599	-	7,066
VA Am. Water PW Sec. 8	42,029	24,364	17,665	-	-	-	17,665		10,599	-	7,066
Waynesboro	3,898	1,949	1,949	-	-	-	1,949		1,949	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**



## POTOMAC Basin: Phosphorus Credit Ledger

Compliance Year:	2019	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.48	\$ 5.76	\$ 0.14
The Exchange (group)	164,507	119,927	44,580	-	(640)	(1,234)	42,706		33,448	(3,101)	12,359
ACSA-Fishersville	1,974	641	1,333	(1,232)	-	-	101		101	-	-
ACSA-Greenville	1,028	450	578	(259)	-	-	319		319	-	-
ACSA-Harriston	411	246	165	-	-	-	165		165	-	-
ACSA-Middle River	3,355	1,745	1,610	-	-	-	1,610		1,610	-	-
ACSA-Mt. Sidney	617	876	(259)	259	-	-	-		-	-	-
ACSA-Stuarts Draft	1,974	545	1,429	-	-	-	1,429		1,429	-	-
ACSA-Vesper View	411	348	63	-	-	-	63		63	-	-
ACSA-Weyers Cave	242	1,474	(1,232)	1,232	-	-	-		-	-	-
Alexandria Renew Ent.	29,603	22,273	7,330	-	-	-	7,330		5,500	-	1,830
Arlington Co.	21,925	14,253	7,672	-	(612)	-	7,060		7,060	-	-
Berryville	339	213	126	-	-	-	126		110	-	16
Broadway Regional	1,172	978	194	-	-	-	194		-	-	194
Fairfax Co-Noman Cole	36,729	28,249	8,480	-	-	-	8,480		8,475	-	5
FCWSA-Vint Hill	148	62	86	-	-	-	86		-	-	86
Front Royal	1,974	2,245	(271)	-	-	-	(271)		-	(271)	-
FWSA-Opequon	6,217	3,186	3,031	-	-	-	3,031		-	-	3,031
FWSA-Parkins Mill	2,467	1,357	1,110	-	-	-	1,110		-	-	1,110
HRRSA-North River	10,262	6,907	3,355	-	-	-	3,355		2,800	-	555
KGCSA-Dahlgren S.D.	914	503	411	(40)	-	-	371		-	-	371
KGCSA-Fairview Beach	179	72	107	-	-	-	107		-	-	107
KGCSA-Purkins Corner	106	146	(40)	40	-	-	-		-	-	-
Leesburg	4,934	2,221	2,713	-	(27)	(1,234)	1,452		-	-	1,452
Loudoun Water- Broad Run	1,809	849	960	-	-	-	960		745	-	215
Luray	789	326	463	-	(1)	-	462		449	-	13
Massanutten PSC	727	1,194	(467)	-	-	-	(467)		-	(467)	-
Merck	592	2,368	(1,776)	-	-	-	(1,776)		-	(1,776)	-
MillerCoors LLC	2,220	2,220	-	-	-	-	-		-	-	-
Mt. Jackson	339	174	165	-	-	-	165		-	-	165
Purcellville	727	436	291	-	-	-	291		146	-	145
PWCSA-HL Mooney	13,157	10,690	2,467	-	-	-	2,467		2,220	-	247
Stafford Co-Aquia	4,386	4,024	362	-	-	-	362		199	-	163
Stoney Creek	354	533	(179)	-	-	-	(179)		-	(180)	1
Strasburg	474	807	(333)	-	-	-	(333)		-	(407)	74
UOSA	4,934	3,221	1,713	-	-	-	1,713		-	-	1,713
VA Am. Water PW Sec. 1	2,522	1,439	1,083	-	-	-	1,083		650	-	433
VA Am. Water PW Sec. 8	2,522	1,439	1,083	-	-	-	1,083		650	-	433
Waynesboro	1,974	1,217	757	-	-	-	757		757	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**



## POTOMAC Basin: Phosphorus Credit Ledger

Compliance Year:	2020	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.47	\$ 5.81	\$ 0.08
The Exchange (group)	164,507	119,889	44,618	-	(640)	(1,234)	42,744		28,424	(2,573)	16,893
ACSA-Fishersville	1,974	660	1,314	(1,277)	-	-	37		37	-	-
ACSA-Greenville	1,028	464	564	(285)	-	-	279		279	-	-
ACSA-Harriston	411	253	158	-	-	-	158		158	-	-
ACSA-Middle River	3,355	1,797	1,558	-	-	-	1,558		1,558	-	-
ACSA-Mt. Sidney	617	902	(285)	285	-	-	-		-	-	-
ACSA-Stuarts Draft	1,974	562	1,412	-	-	-	1,412		1,412	-	-
ACSA-Vesper View	411	358	53	-	-	-	53		53	-	-
ACSA-Weyers Cave	242	1,519	(1,277)	1,277	-	-	-		-	-	-
Alexandria Renew Ent.	29,603	22,504	7,099	-	-	-	7,099		-	-	7,099
Arlington Co.	21,925	14,527	7,398	-	(612)	-	6,786		6,786	-	-
Berryville	339	203	136	-	-	-	136		130	-	6
Broadway Regional	1,172	990	182	-	-	-	182		-	-	182
Fairfax Co-Noman Cole	36,729	27,405	9,324	-	-	-	9,324		9,319	-	5
FCWSA-Vint Hill	148	65	83	-	-	-	83		-	-	83
Front Royal	1,974	2,250	(276)	-	-	-	(276)		-	(276)	-
FWSA-Opequon	6,217	3,330	2,887	-	-	-	2,887		-	-	2,887
FWSA-Parkins Mill	2,467	1,529	938	-	-	-	938		-	-	938
HRRSA-North River	10,262	6,907	3,355	-	-	-	3,355		2,800	-	555
KGCSA-Dahlgren S.D.	914	548	366	(40)	-	-	326		-	-	326
KGCSA-Fairview Beach	179	81	98	-	-	-	98		-	-	98
KGCSA-Purkins Corner	106	146	(40)	40	-	-	-		-	-	-
Leesburg	4,934	2,428	2,506	-	(27)	(1,234)	1,245		-	-	1,245
Loudoun Water- Broad Run	1,809	914	895	-	-	-	895		895	-	-
Luray	789	326	463	-	(1)	-	462		449	-	13
Massanutten PSC	727	368	359	-	-	-	359		-	-	359
Merck	592	2,368	(1,776)	-	-	-	(1,776)		-	(1,776)	-
MillerCoors LLC	2,220	2,220	-	-	-	-	-		-	-	-
Mt. Jackson	339	178	161	-	-	-	161		-	-	161
Purcellville	727	460	267	-	-	-	267		134	-	133
PWCSA-HL Mooney	13,157	10,827	2,330	-	-	-	2,330		2,097	-	233
Stafford Co-Aquia	4,386	4,024	362	-	-	-	362		326	-	36
Stoney Creek	354	533	(179)	-	-	-	(179)		-	(180)	1
Strasburg	474	815	(341)	-	-	-	(341)		-	(341)	-
UOSA	4,934	3,267	1,667	-	-	-	1,667		-	-	1,667
VA Am. Water PW Sec. 1	2,522	1,439	1,083	-	-	-	1,083		650	-	433
VA Am. Water PW Sec. 8	2,522	1,439	1,083	-	-	-	1,083		650	-	433
Waynesboro	1,974	1,283	691	-	-	-	691		691	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## POTOMAC Basin: Phosphorus Credit Ledger

Compliance Year:	2021	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.48	\$ 5.82	\$ 0.07
The Exchange (group)	158,608	118,833	39,775	-	(640)	(1,074)	38,061		23,663	(2,183)	16,581
ACSA-Fishersville	1,718	592	1,126	(1,126)	-	-	-		-	-	-
ACSA-Greenville	894	387	507	(279)	-	-	228		228	-	-
ACSA-Harriston	358	227	131	-	-	-	131		131	-	-
ACSA-Middle River	2,920	1,611	1,309	-	-	-	1,309		1,309	-	-
ACSA-Mt. Sidney	537	816	(279)	279	-	-	-		-	-	-
ACSA-Stuarts Draft	1,718	503	1,215	(46)	-	-	1,169		1,169	-	-
ACSA-Vesper View	358	297	61	-	-	-	61		61	-	-
ACSA-Weyers Cave	215	1,387	(1,172)	1,172	-	-	-		-	-	-
Alexandria Renew Ent.	29,603	22,504	7,099	-	-	-	7,099		-	-	7,099
Arlington Co.	21,925	14,801	7,124	-	(612)	-	6,512		6,512	-	-
Berryville	301	180	121	-	-	-	121		115	-	6
Broadway Regional	1,039	889	150	-	-	-	150		-	-	150
Fairfax Co-Noman Cole	36,729	29,313	7,416	-	-	-	7,416		7,411	-	5
FCWSA-Vint Hill	148	68	80	-	-	-	80		-	-	80
Front Royal	1,718	1,958	(240)	-	-	-	(240)		-	(240)	-
FWSA-Opequon	5,411	3,006	2,405	-	-	-	2,405		-	-	2,405
FWSA-Parkins Mill	2,147	1,439	708	-	-	-	708		-	-	708
HRRSA-North River	8,932	6,092	2,840	-	-	-	2,840		1,000	-	1,840
KGCSA-Dahlgren S.D.	914	457	457	(137)	-	-	320		300	-	20
KGCSA-Fairview Beach	183	183	-	-	-	-	-		-	-	-
KGCSA-Purkins Corner	110	247	(137)	137	-	-	-		-	-	-
Leesburg	4,294	2,302	1,992	-	(27)	(1,074)	891		-	-	891
Loudoun Water- Broad Run	1,575	872	703	-	-	-	703		703	-	-
Luray	687	283	404	-	(1)	-	403		391	-	12
Massanutten PSC	644	326	318	-	-	-	318		-	-	318
Merck	515	2,061	(1,546)	-	-	-	(1,546)		-	(1,546)	-
MillerCoors LLC	1,933	1,932	1	-	-	-	1		-	-	1
Mt. Jackson	301	157	144	-	-	-	144		-	-	144
Purcellville	644	472	172	-	-	-	172		86	-	86
PWCSA-HL Mooney	13,157	10,882	2,275	-	-	-	2,275		2,048	-	227
Stafford Co-Aquia	4,386	4,024	362	-	-	-	362		326	-	36
Stoney Creek	313	401	(88)	-	-	-	(88)		-	(88)	-
Strasburg	421	730	(309)	-	-	-	(309)		-	(309)	-
UOSA	5,098	3,411	1,687	-	-	-	1,687		-	-	1,687
VA Am. Water PW Sec. 1	2,522	1,439	1,083	-	-	-	1,083		650	-	433
VA Am. Water PW Sec. 8	2,522	1,439	1,083	-	-	-	1,083		650	-	433
Waynesboro	1,718	1,145	573	-	-	-	573		573	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## POTOMAC Basin: Phosphorus Credit Ledger

Compliance Year:	2022	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.50	\$ 5.93	\$ 0.08
The Exchange (group)	158,608	119,492	39,116	-	(686)	(1,074)	37,356		23,369	(2,190)	16,177
ACSA-Fishersville	1,718	573	1,145	(1,145)	-	-	-		-	-	-
ACSA-Greenville	894	429	465	-	-	-	465		465	-	-
ACSA-Harriston	358	252	106	-	-	-	106		106	-	-
ACSA-Middle River	2,920	1,682	1,238	-	-	-	1,238		1,238	-	-
ACSA-Mt. Sidney	537	846	(309)	309	-	-	-		-	-	-
ACSA-Stuarts Draft	1,718	508	1,210	(393)	-	-	817		817	-	-
ACSA-Vesper View	358	317	41	-	-	-	41		41	-	-
ACSA-Weyers Cave	215	1,444	(1,229)	1,229	-	-	-		-	-	-
Alexandria Renew Ent.	29,603	22,504	7,099	-	-	-	7,099		-	-	7,099
Arlington Co.	21,925	14,527	7,398	-	(612)	-	6,786		6,786	-	-
Berryville	301	176	125	-	-	-	125		90	-	35
Broadway Regional	1,039	901	138	-	-	-	138		-	-	138
Fairfax Co-Noman Cole	36,729	29,471	7,258	-	-	-	7,258		7,258	-	-
FCWSA-Vint Hill	148	71	77	-	-	-	77		-	-	77
Front Royal	1,718	1,958	(240)	-	-	-	(240)		-	(240)	-
FWSA-Opequon	5,411	3,113	2,298	-	-	-	2,298		-	-	2,298
FWSA-Parkins Mill	2,147	1,546	601	-	-	-	601		-	-	601
HRRSA-North River	8,932	6,092	2,840	-	(73)	-	2,767		1,000	-	1,767
KGCSA-Dahlgren S.D.	914	457	457	(137)	-	-	320		300	-	20
KGCSA-Fairview Beach	183	183	-	-	-	-	-		-	-	-
KGCSA-Purkins Corner	110	247	(137)	137	-	-	-		-	-	-
Leesburg	4,294	2,499	1,795	-	-	(1,074)	721		-	-	721
Loudoun Water- Broad Run	1,575	939	636	-	-	-	636		636	-	-
Luray	687	296	391	-	(1)	-	390		390	-	-
Massanutten PSC	644	326	318	-	-	-	318		-	-	318
Merck	515	2,061	(1,546)	-	-	-	(1,546)		-	(1,546)	-
MillerCoors LLC	1,933	1,932	1	-	-	-	1		-	-	1
Mt. Jackson	301	240	61	-	-	-	61		-	-	61
Purcellville	644	498	146	-	-	-	146		73	-	73
PWCSA-HL Mooney	13,157	10,937	2,220	-	-	-	2,220		1,998	-	222
Stafford Co-Aquia	4,386	4,024	362	-	-	-	362		326	-	36
Stoney Creek	313	401	(88)	-	-	-	(88)		-	(88)	-
Strasburg	421	737	(316)	-	-	-	(316)		-	(316)	-
UOSA	5,098	3,236	1,862	-	-	-	1,862		-	-	1,862
VA Am. Water PW Sec. 1	2,522	1,462	1,060	-	-	-	1,060		636	-	424
VA Am. Water PW Sec. 8	2,522	1,462	1,060	-	-	-	1,060		636	-	424
Waynesboro	1,718	1,145	573	-	-	-	573		573	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## POTOMAC Basin: Phosphorus Credit Ledger

Compliance Year:	2023	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.41	\$ 6.08	\$ 0.08
The Exchange (group)	158,608	114,844	43,764	-	(316)	(1,074)	42,374		28,728	(2,197)	15,843
ACSA-Fishersville	1,718	576	1,142	(1,142)	-	-	-		-	-	-
ACSA-Greenville	894	412	482	-	-	-	482		482	-	-
ACSA-Harriston	358	254	104	-	-	-	104		104	-	-
ACSA-Middle River	2,920	1,617	1,303	-	-	-	1,303		1,303	-	-
ACSA-Mt. Sidney	537	617	(80)	80	-	-	-		-	-	-
ACSA-Stuarts Draft	1,718	483	1,235	(153)	-	-	1,082		1,082	-	-
ACSA-Vesper View	358	358	-	-	-	-	-		-	-	-
ACSA-Weyers Cave	215	1,430	(1,215)	1,215	-	-	-		-	-	-
Alexandria Renew Ent.	29,603	22,504	7,099	-	-	-	7,099		-	-	7,099
Arlington Co.	21,925	14,527	7,398	-	(242)	-	7,156		7,156	-	-
Berryville	301	180	121	-	-	-	121		90	-	31
Broadway Regional	1,039	912	127	-	-	-	127		-	-	127
Fairfax Co-Noman Cole	36,729	24,159	12,570	-	-	-	12,570		12,570	-	-
FCWSA-Vint Hill	148	75	73	-	-	-	73		-	-	73
Front Royal	1,718	1,958	(240)	-	-	-	(240)		-	(240)	-
FWSA-Opequon	5,411	3,221	2,190	-	-	-	2,190		-	-	2,190
FWSA-Parkins Mill	2,147	1,610	537	-	-	-	537		-	-	537
HRRSA-North River	8,932	6,252	2,680	-	(73)	-	2,607		1,000	-	1,607
KGCSA-Dahlgren S.D.	914	457	457	(200)	-	-	257		200	-	57
KGCSA-Fairview Beach	183	219	(36)	36	-	-	-		-	-	-
KGCSA-Purkins Corner	110	274	(164)	164	-	-	-		-	-	-
Leesburg	4,294	2,655	1,639	-	-	(1,074)	565		-	-	565
Loudoun Water- Broad Run	1,575	986	589	-	-	-	589		589	-	-
Luray	687	296	391	-	(1)	-	390		390	-	-
Massanutten PSC	644	326	318	-	-	-	318		-	-	318
Merck	515	2,061	(1,546)	-	-	-	(1,546)		-	(1,546)	-
MillerCoors LLC	1,933	1,932	1	-	-	-	1		-	-	1
Mt. Jackson	301	240	61	-	-	-	61		-	-	61
Purcellville	644	524	120	-	-	-	120		60	-	60
PWCSA-HL Mooney	13,157	10,991	2,166	-	-	-	2,166		1,561	-	605
Stafford Co-Aquia	4,386	4,090	296	-	-	-	296		296	-	-
Stoney Creek	313	401	(88)	-	-	-	(88)		-	(88)	-
Strasburg	421	744	(323)	-	-	-	(323)		-	(323)	-
UOSA	5,098	3,434	1,664	-	-	-	1,664		-	-	1,664
VA Am. Water PW Sec. 1	2,522	1,462	1,060	-	-	-	1,060		636	-	424
VA Am. Water PW Sec. 8	2,522	1,462	1,060	-	-	-	1,060		636	-	424
Waynesboro	1,718	1,145	573	-	-	-	573		573	-	-
Purchase by Eastern Shore	-	-	-	-	-	-	-		-	-	-

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

# Potomac-Shenandoah River Basin

**Supplemental Information for Individual Facilities**



## Owner Bubble: Augusta County Service Authority

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

<b>NITROGEN Credits</b>	<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Fishersville	(2,973)	(2,916)	(1,715)	(1,755)	(1,747)	(1,711)	(1,674)	(1,638)
Greenville	(479)	(771)	(425)	(517)	-	-	(59)	(194)
Harriston	(816)	(809)	-	(56)	-	-	-	-
Middle River	-	-	-	-	-	-	-	-
Mt. Sidney	492	532	351	382	203	203	268	268
Stuarts Draft	-	-	(1,076)	(1,073)	(811)	(935)	(1,067)	(1,056)
Vesper View	(462)	(445)	-	-	-	-	-	-
Weyers Cave	4,238	4,409	2,865	3,019	2,355	2,443	2,532	2,620
<b>TOTAL (must sum to 0)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Credits Available outside Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Fishersville	-	-	-	-	-	-	-	-
Greenville	433	126	126	-	503	503	444	309
Harriston	-	-	490	419	522	522	496	496
Middle River	4,407	4,290	2,502	2,393	2,492	2,421	2,344	2,262
Mt. Sidney	-	-	-	-	-	-	-	-
Stuarts Draft	1,830	1,812	-	-	281	146	-	-
Vesper View	-	-	288	266	192	192	192	192
Weyers Cave	-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>	<b>6,670</b>	<b>6,228</b>	<b>3,406</b>	<b>3,078</b>	<b>3,990</b>	<b>3,784</b>	<b>3,476</b>	<b>3,259</b>
<b>Class A Sales (Purchases)</b>	<b>6,670</b>	<b>6,228</b>	<b>3,406</b>	<b>3,078</b>	<b>3,990</b>	<b>3,784</b>	<b>3,476</b>	<b>3,259</b>
<i>Expected Class B Credits</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>WQIF-Held Credits</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

<b>PHOSPHORUS Credits</b>	<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Fishersville	(1,232)	(1,277)	(1,126)	(1,145)	(1,142)	(1,124)	(1,106)	(1,088)
Greenville	(259)	(285)	(279)	-	-	-	-	-
Harriston	-	-	-	-	-	-	-	-
Middle River	-	-	-	-	-	-	-	-
Mt. Sidney	259	285	279	309	80	80	136	136
Stuarts Draft	-	-	(46)	(393)	(153)	(210)	(322)	(379)
Vesper View	-	-	-	-	-	-	-	-
Weyers Cave	1,232	1,277	1,172	1,229	1,215	1,254	1,292	1,331
<b>TOTAL (must sum to 0)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Credits Available outside Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Fishersville	101	37	-	-	-	-	-	-
Greenville	319	279	228	465	482	482	482	482
Harriston	165	158	131	106	104	104	41	41
Middle River	1,610	1,558	1,309	1,238	1,303	1,256	1,206	1,152
Mt. Sidney	-	-	-	-	-	-	-	-
Stuarts Draft	1,429	1,412	1,169	817	1,082	1,011	881	809
Vesper View	63	53	61	41	-	-	-	-
Weyers Cave	-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>	<b>3,687</b>	<b>3,497</b>	<b>2,898</b>	<b>2,667</b>	<b>2,971</b>	<b>2,853</b>	<b>2,610</b>	<b>2,484</b>
<b>Class A Sales (Purchases)</b>	<b>3,687</b>	<b>3,497</b>	<b>2,898</b>	<b>2,667</b>	<b>2,971</b>	<b>2,853</b>	<b>2,610</b>	<b>2,484</b>
<i>Expected Class B Credits</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>WQIF-Held Credits</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>



## NITROGEN FACILITY SUMMARY

ACSA-Fishersville

POTOMAC Trading Basin

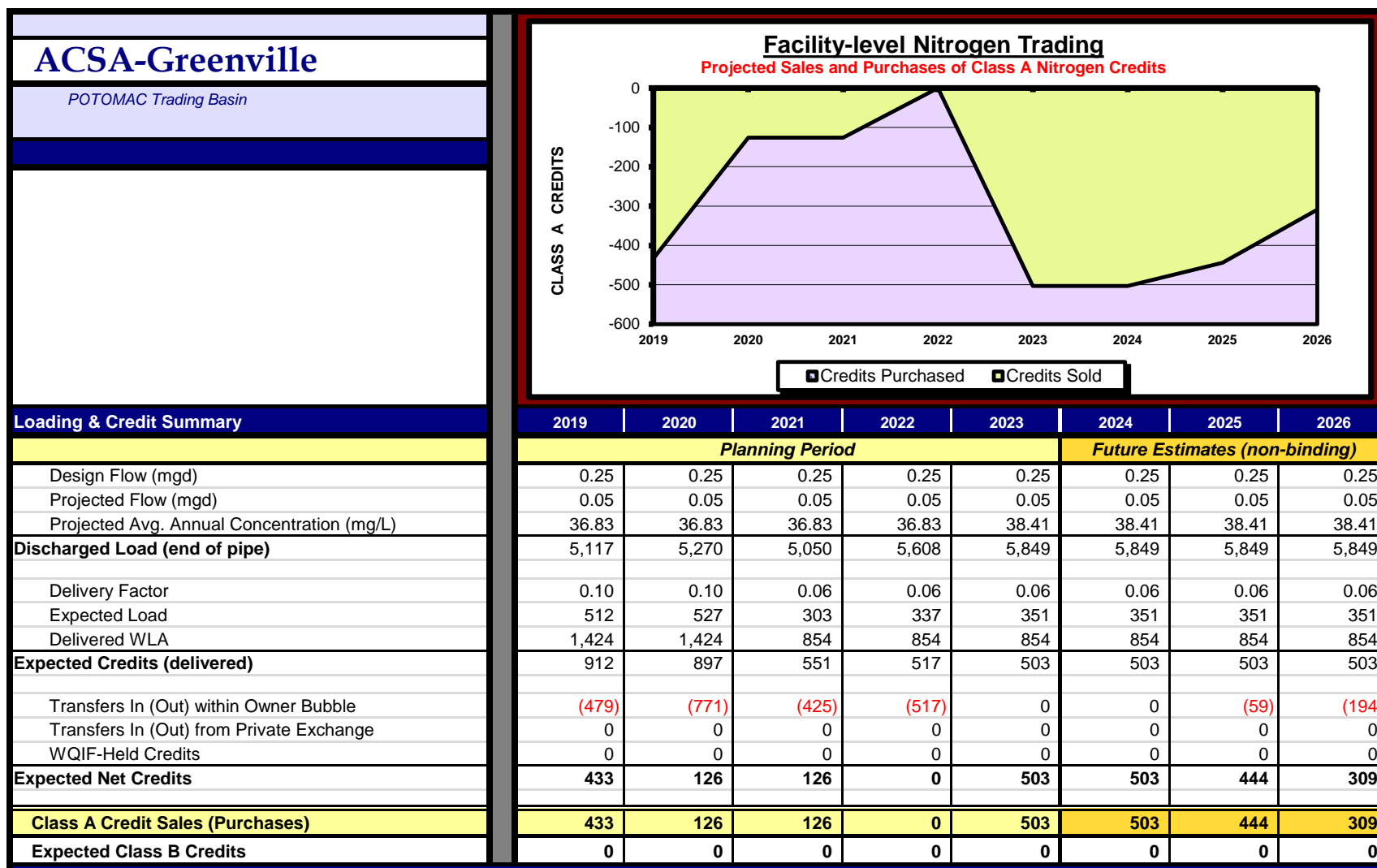
Loading & Credit Summary	
Design Flow (mgd)	
Projected Flow (mgd)	
Projected Avg. Annual Concentration (mg/L)	
Discharged Load (end of pipe)	
Delivery Factor	
Expected Load	
Delivered WLA	
Expected Credits (delivered)	
Transfers In (Out) within Owner Bubble	
Transfers In (Out) from Private Exchange	
WQIF-Held Credits	
Expected Net Credits	
Class A Credit Sales (Purchases)	
Expected Class B Credits	

Facility-level Nitrogen Trading

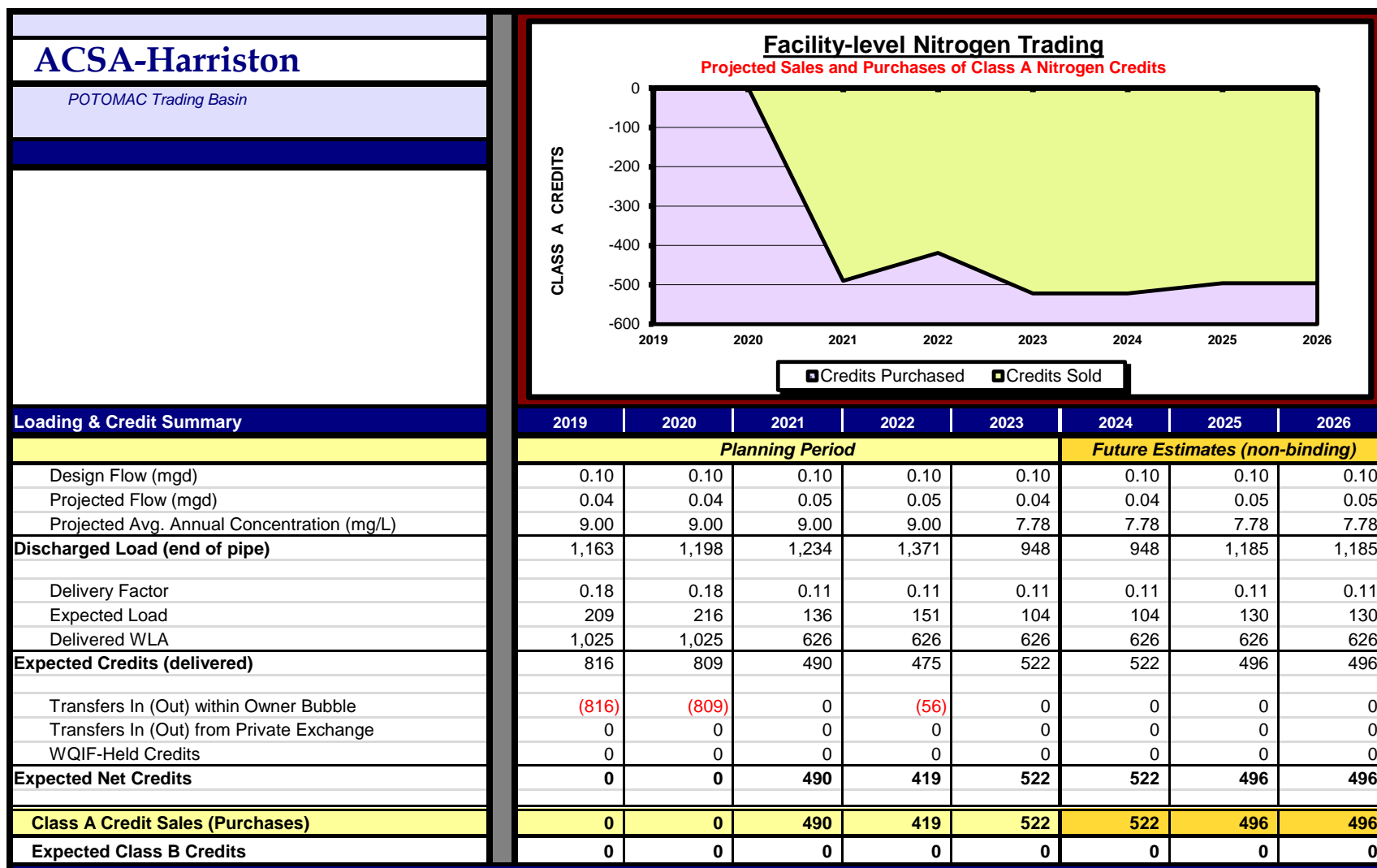
Projected Sales and Purchases of Class A Nitrogen Credits

2019	2020	2021	2022	2023	2024	2025	2026
Planning Period					Future Estimates (non-binding)		
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
1.56	1.61	1.65	1.60	1.61	1.66	1.71	1.76
4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
18,998	19,568	20,155	19,492	19,613	20,223	20,832	21,441
0.10	0.10	0.06	0.06	0.06	0.06	0.06	0.06
1,900	1,957	1,209	1,169	1,177	1,213	1,250	1,286
4,873	4,873	2,924	2,924	2,924	2,924	2,924	2,924
2,973	2,916	1,715	1,755	1,747	1,711	1,674	1,638
(2,973)	(2,916)	(1,715)	(1,755)	(1,747)	(1,711)	(1,674)	(1,638)
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

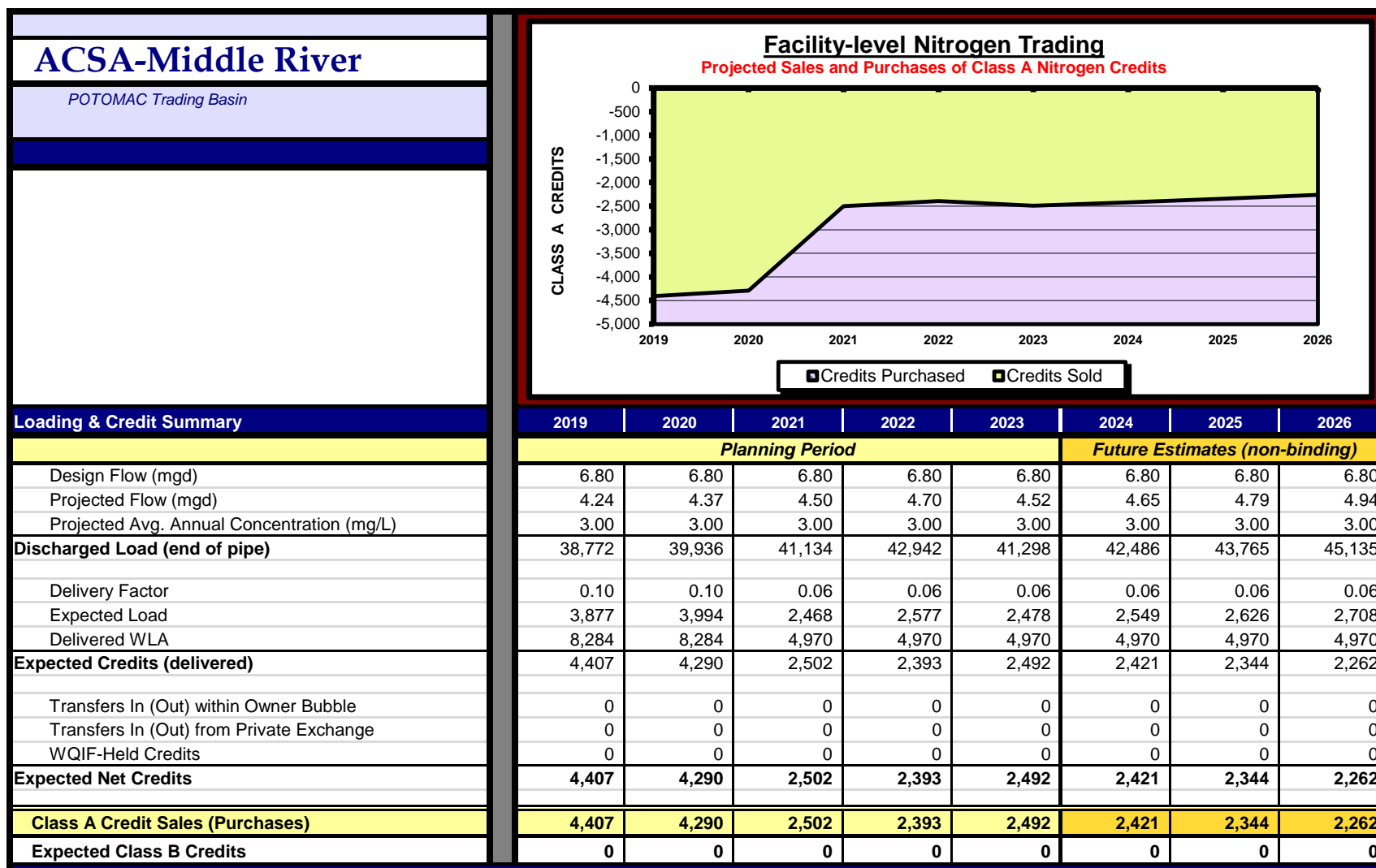
## NITROGEN FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



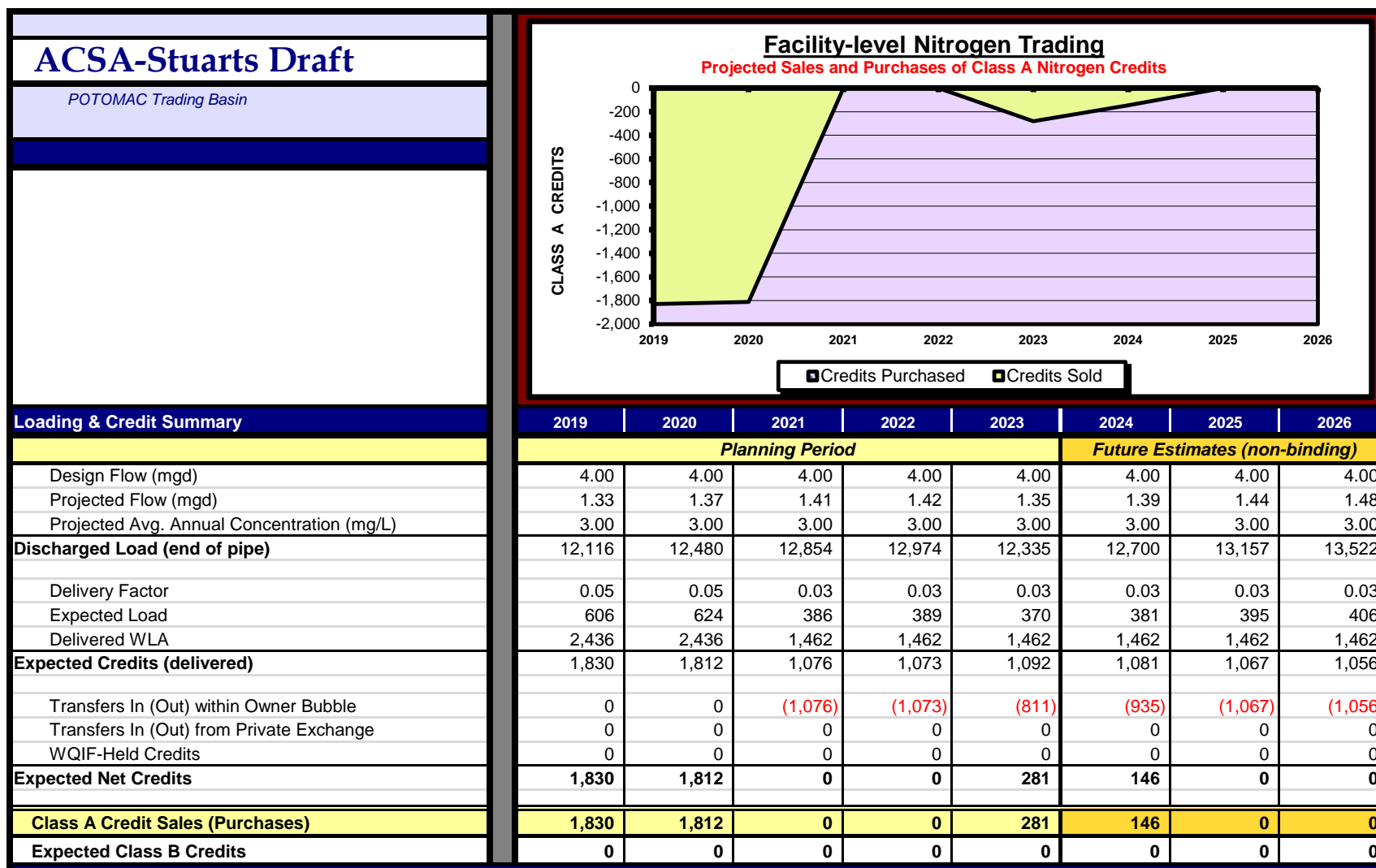
## NITROGEN FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

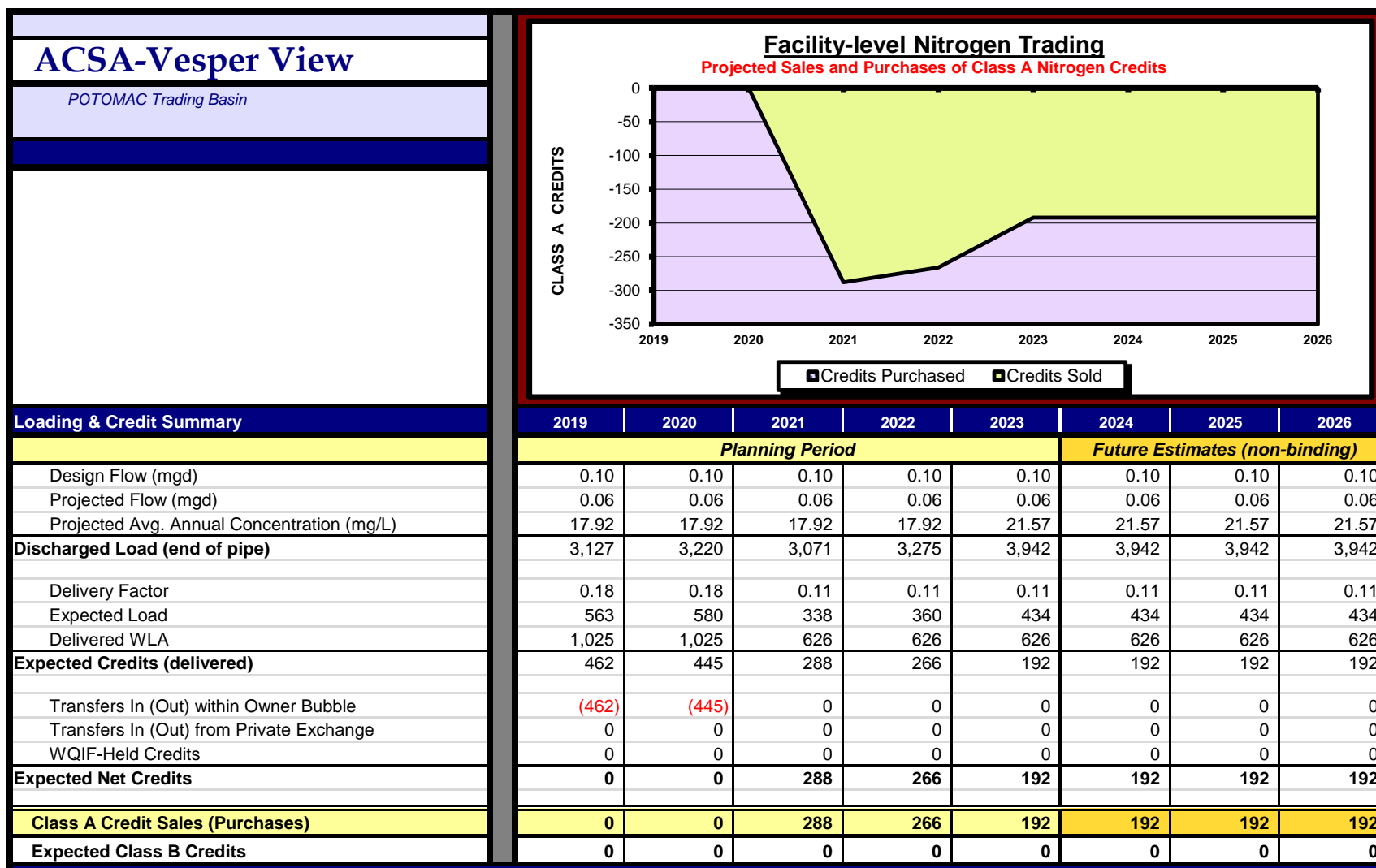
[illegible]

## NITROGEN FACILITY SUMMARY





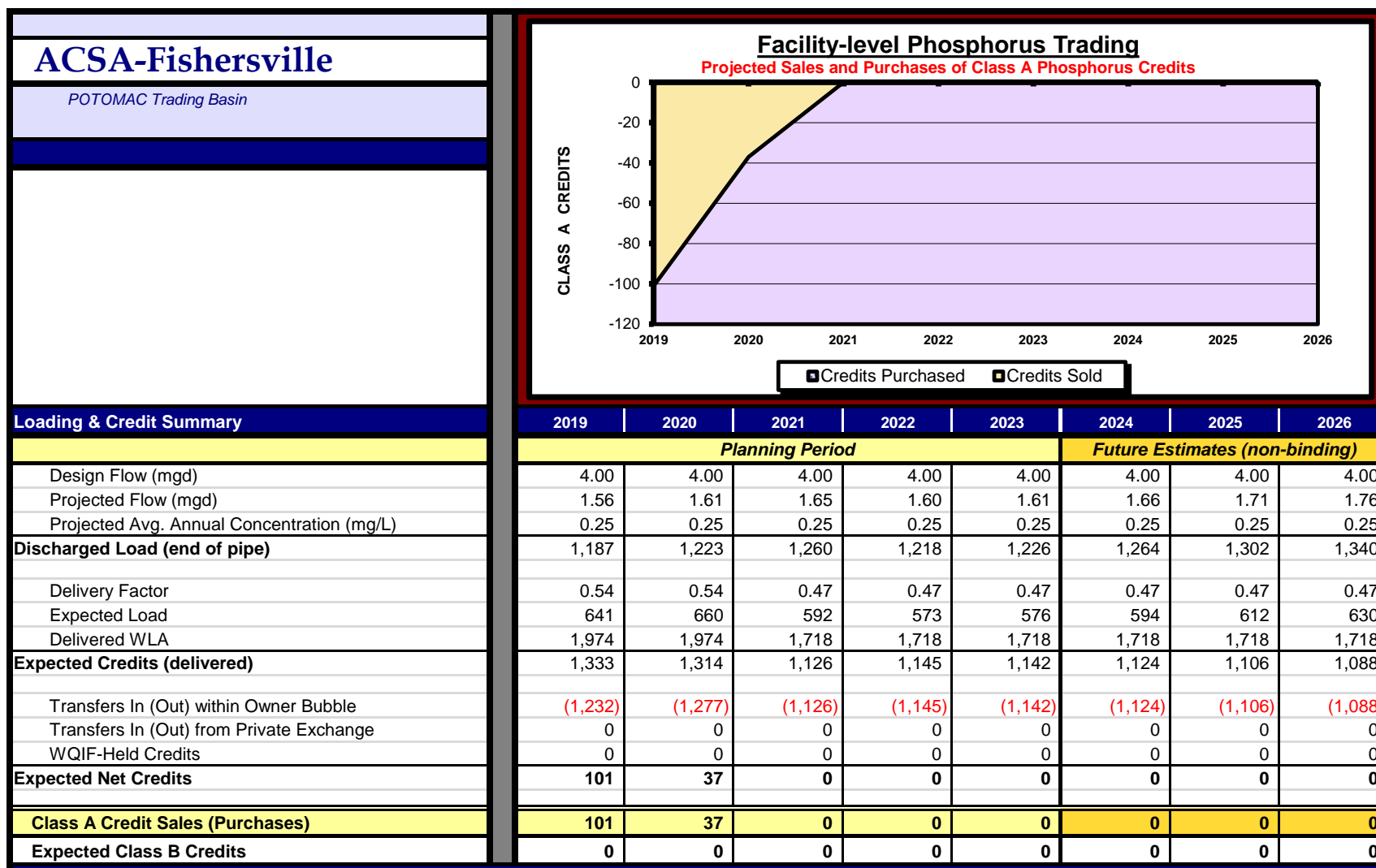
## NITROGEN FACILITY SUMMARY



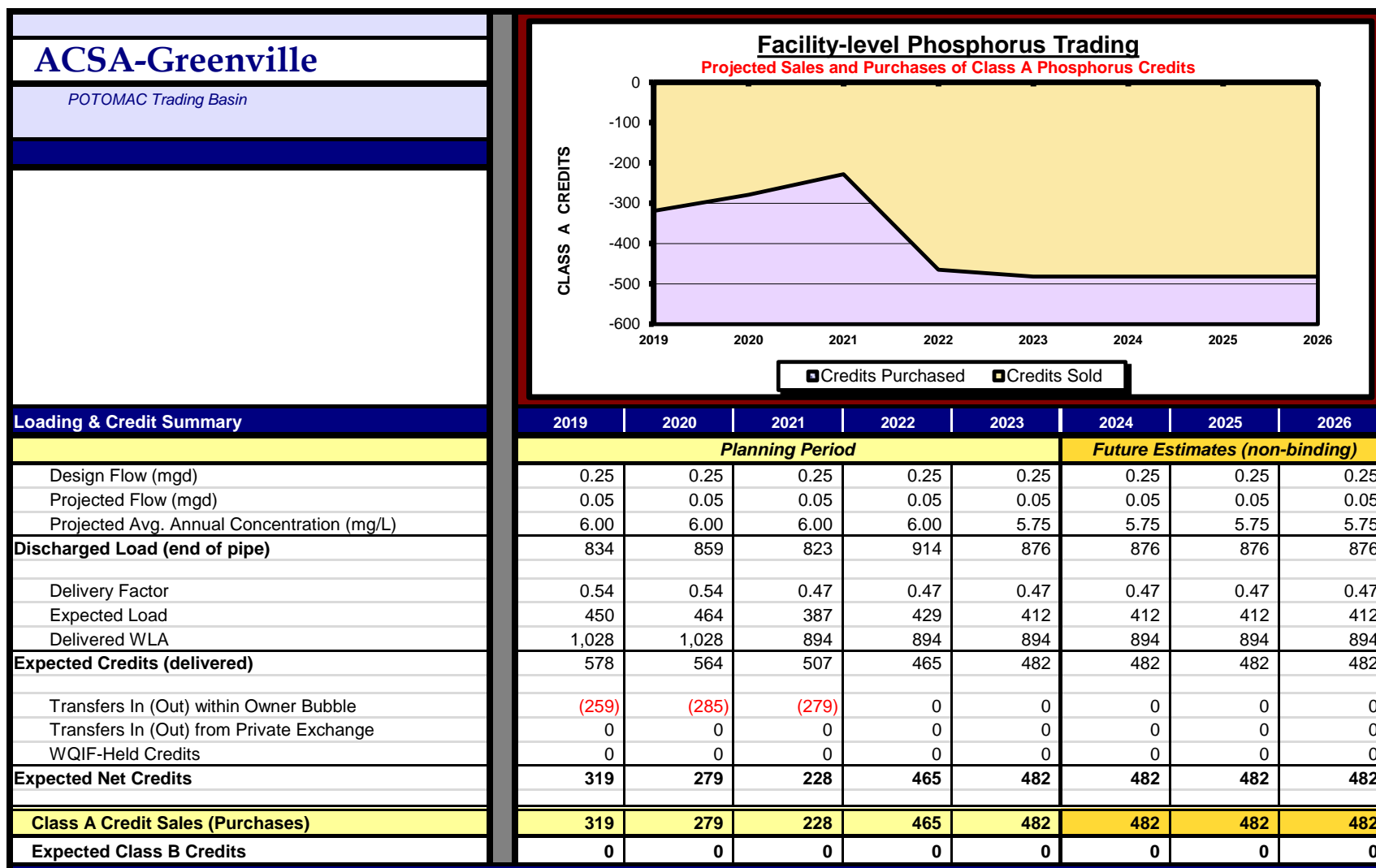
## NITROGEN FACILITY SUMMARY

<div> <div>ACSA-Weyers Cave</div> <div>POTOMAC Trading Basin</div> </div>		<div> <div>Facility-level Nitrogen Trading</div> <div>Projected Sales and Purchases of Class A Nitrogen Credits</div> </div>							
Loading & Credit Summary		2019	2020	2021	2022	2023	2024	2025	2026
		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Projected Flow (mgd)		0.37	0.38	0.39	0.41	0.37	0.38	0.39	0.40
Projected Avg. Annual Concentration (mg/L)		21.00	21.00	21.00	21.00	19.34	19.34	19.34	19.34
Discharged Load (end of pipe)		23,748	24,461	25,194	26,222	21,793	22,382	22,971	23,560
Delivery Factor		0.24	0.24	0.15	0.15	0.15	0.15	0.15	0.15
Expected Load		5,700	5,871	3,779	3,933	3,269	3,357	3,446	3,534
Delivered WLA		1,462	1,462	914	914	914	914	914	914
Expected Credits (delivered)		(4,238)	(4,409)	(2,865)	(3,019)	(2,355)	(2,443)	(2,532)	(2,620)
Transfers In (Out) within Owner Bubble		4,238	4,409	2,865	3,019	2,355	2,443	2,532	2,620
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		0	0	0	0	0	0	0	0
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		0	0	0	0	0	0	0	0

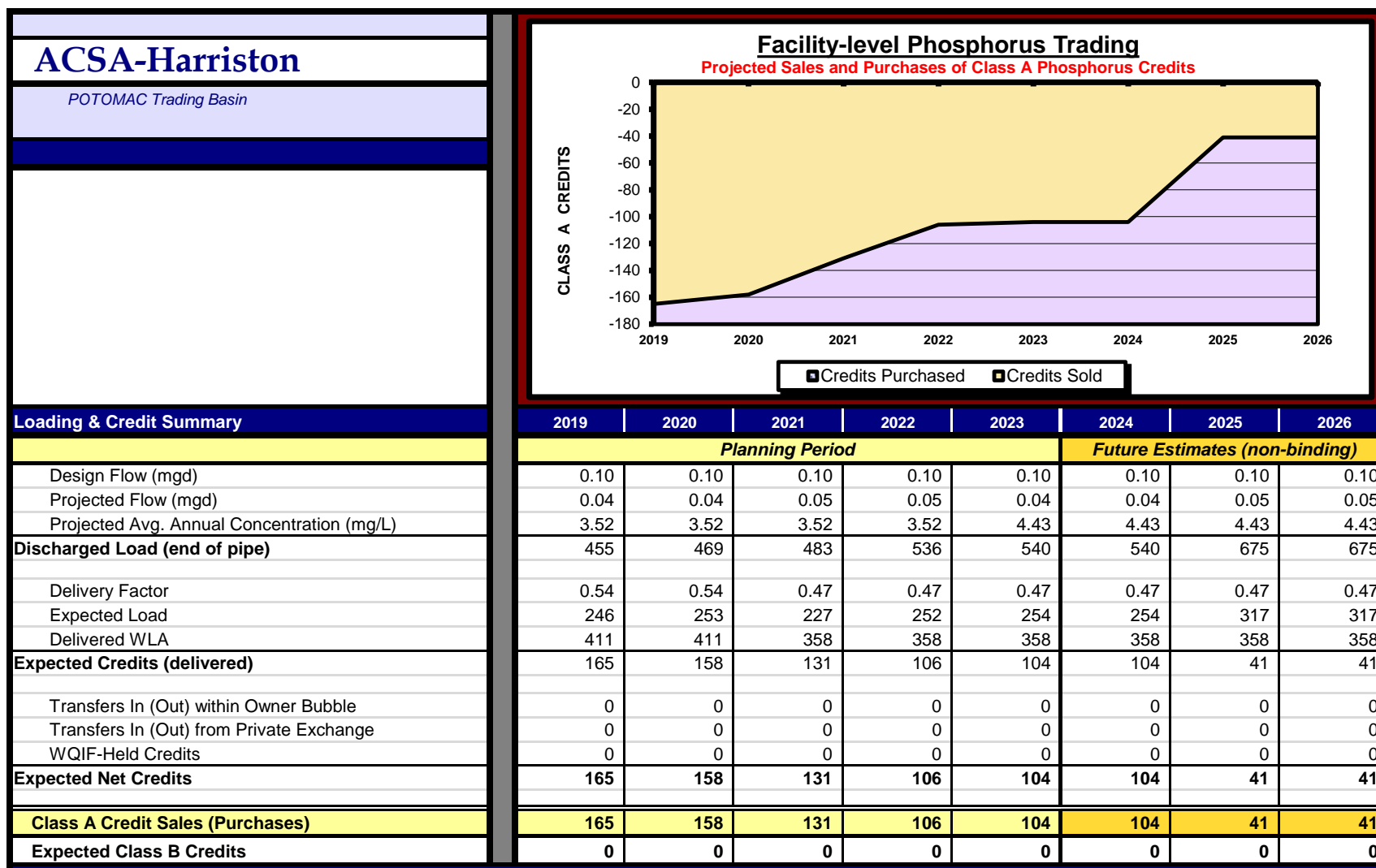
## PHOSPHORUS FACILITY SUMMARY



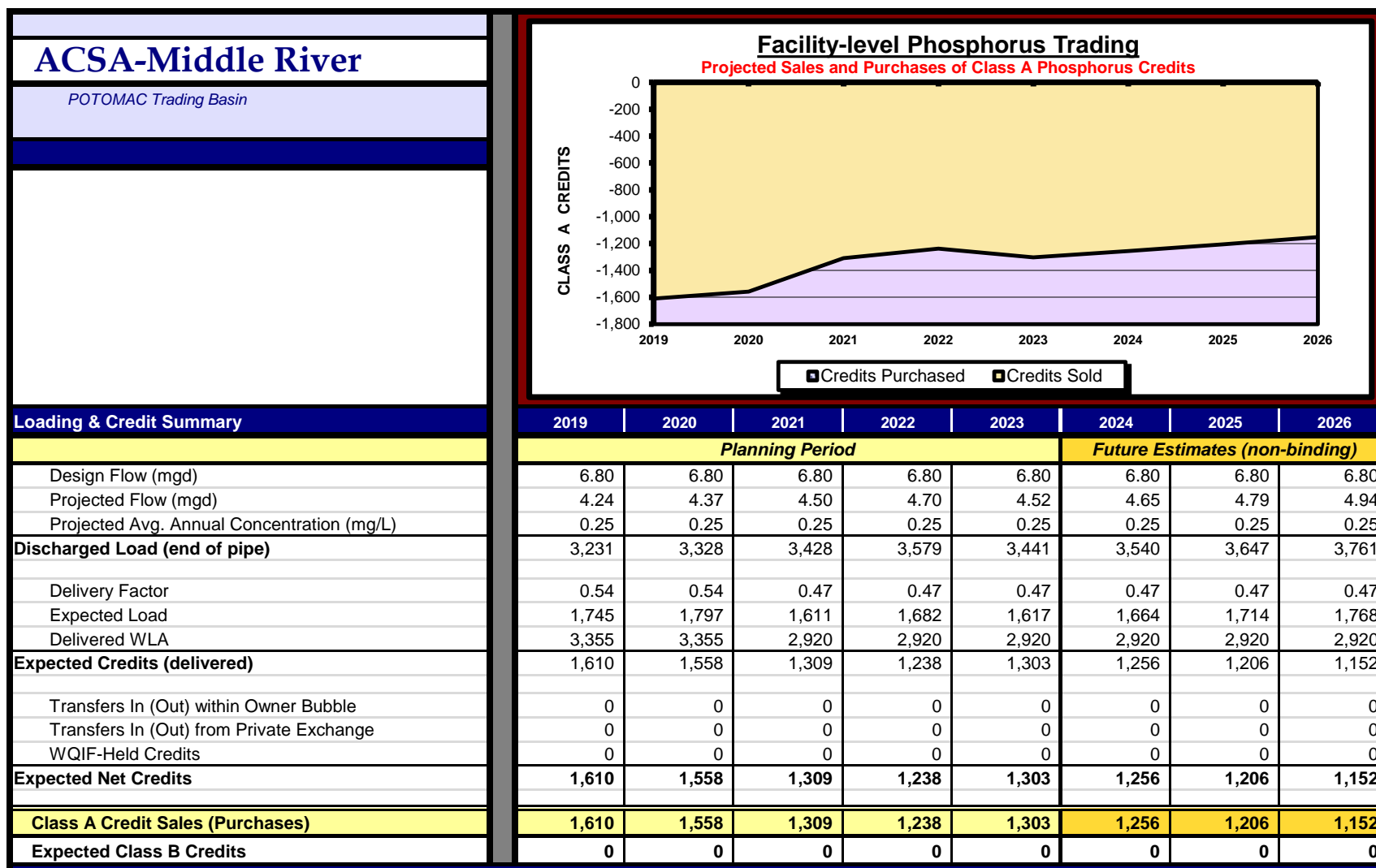
## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

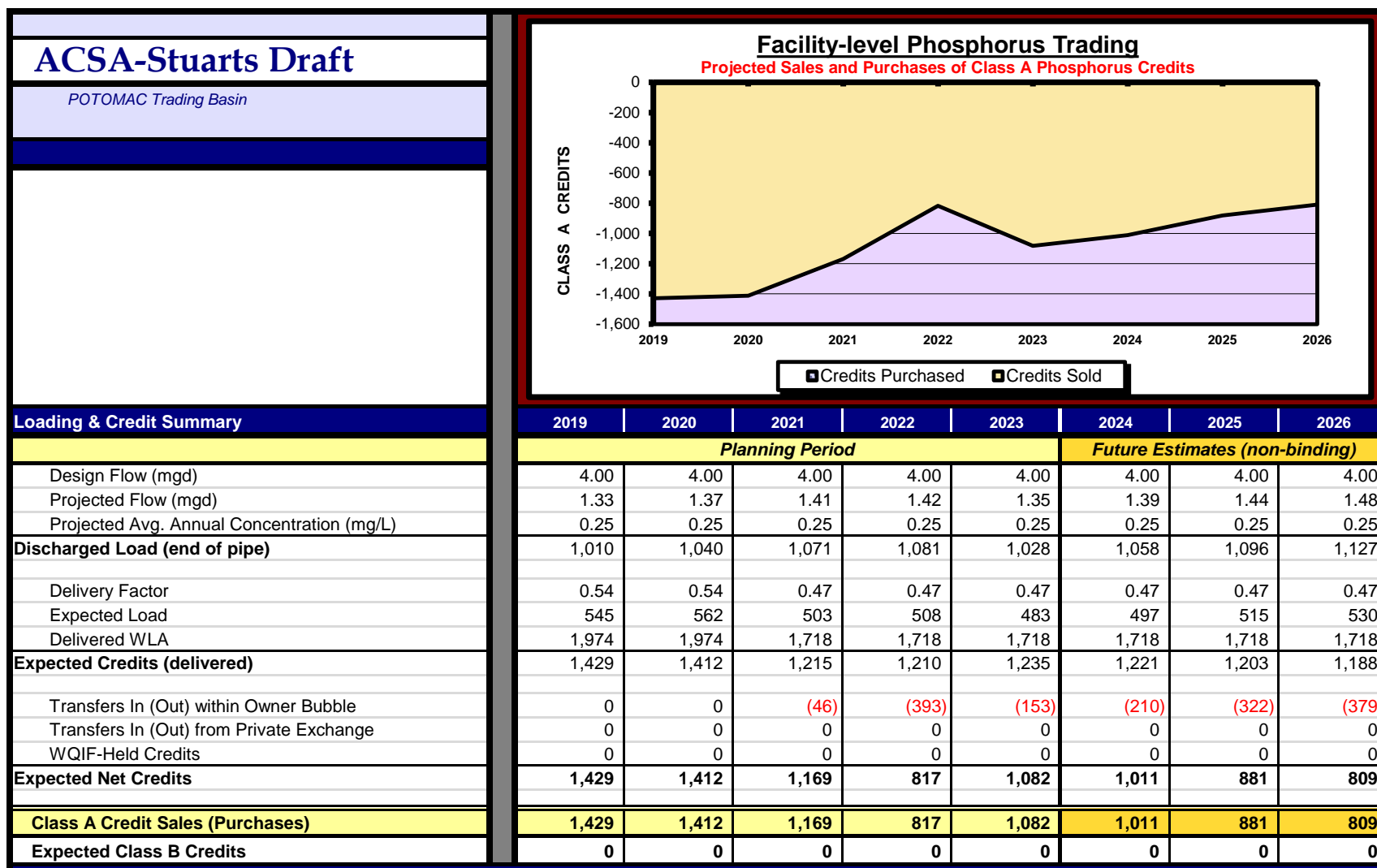


## PHOSPHORUS FACILITY SUMMARY

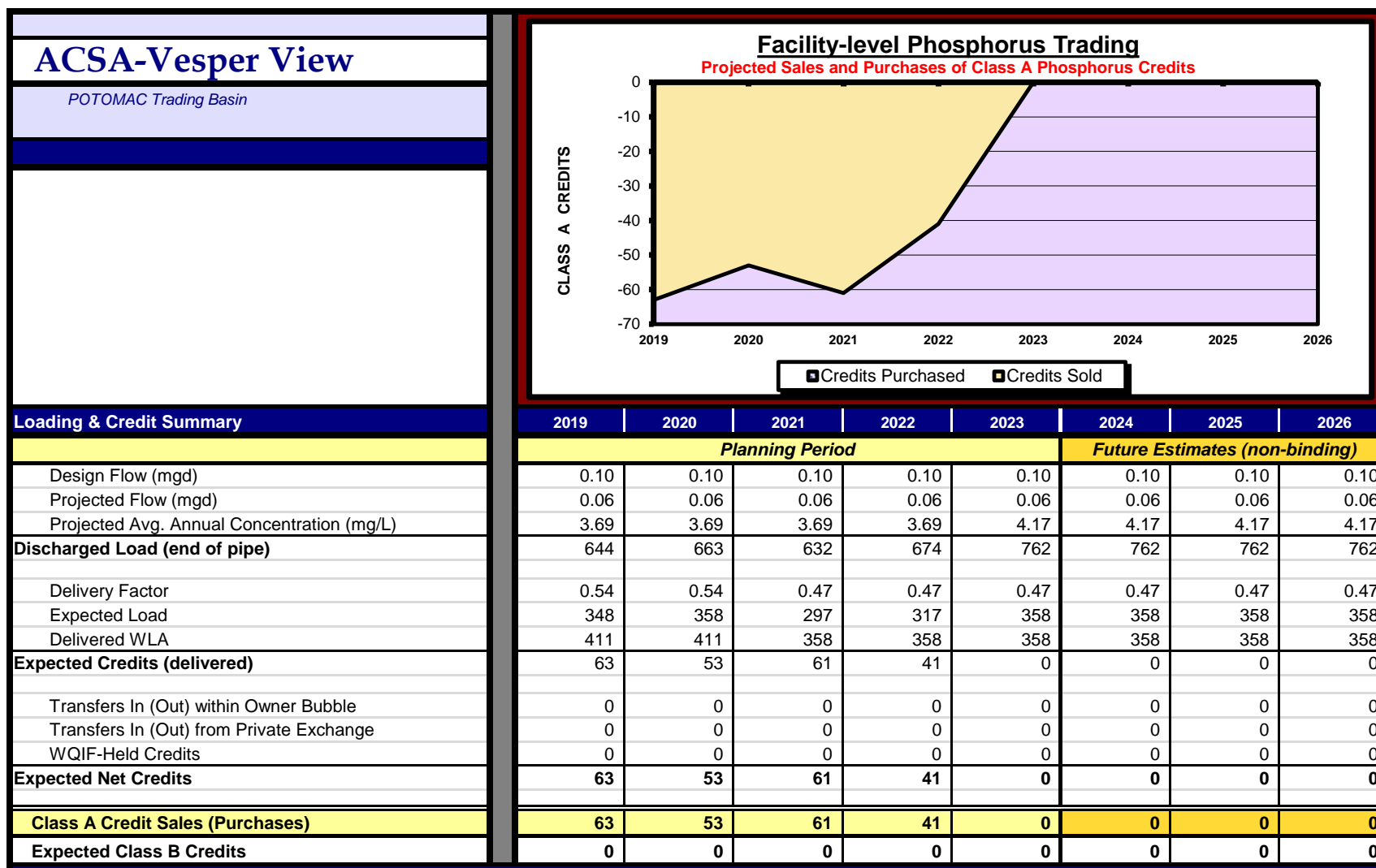
<div> <div>ACSA-Mt. Sidney</div> <div>POTOMAC Trading Basin</div> </div>		<div> <div>Facility-level Phosphorus Trading</div> <div>Projected Sales and Purchases of Class A Phosphorus Credits</div> </div>							
Loading & Credit Summary		2019	2020	2021	2022	2023	2024	2025	2026
		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Projected Flow (mgd)		0.13	0.13	0.14	0.14	0.11	0.11	0.12	0.12
Projected Avg. Annual Concentration (mg/L)		4.22	4.22	4.22	4.22	3.92	3.92	3.92	3.92
Discharged Load (end of pipe)		1,623	1,671	1,736	1,799	1,313	1,313	1,433	1,433
Delivery Factor		0.54	0.54	0.47	0.47	0.47	0.47	0.47	0.47
Expected Load		876	902	816	846	617	617	673	673
Delivered WLA		617	617	537	537	537	537	537	537
Expected Credits (delivered)		(259)	(285)	(279)	(309)	(80)	(80)	(136)	(136)
Transfers In (Out) within Owner Bubble		259	285	279	309	80	80	136	136
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		0	0	0	0	0	0	0	0
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		0	0	0	0	0	0	0	0



## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

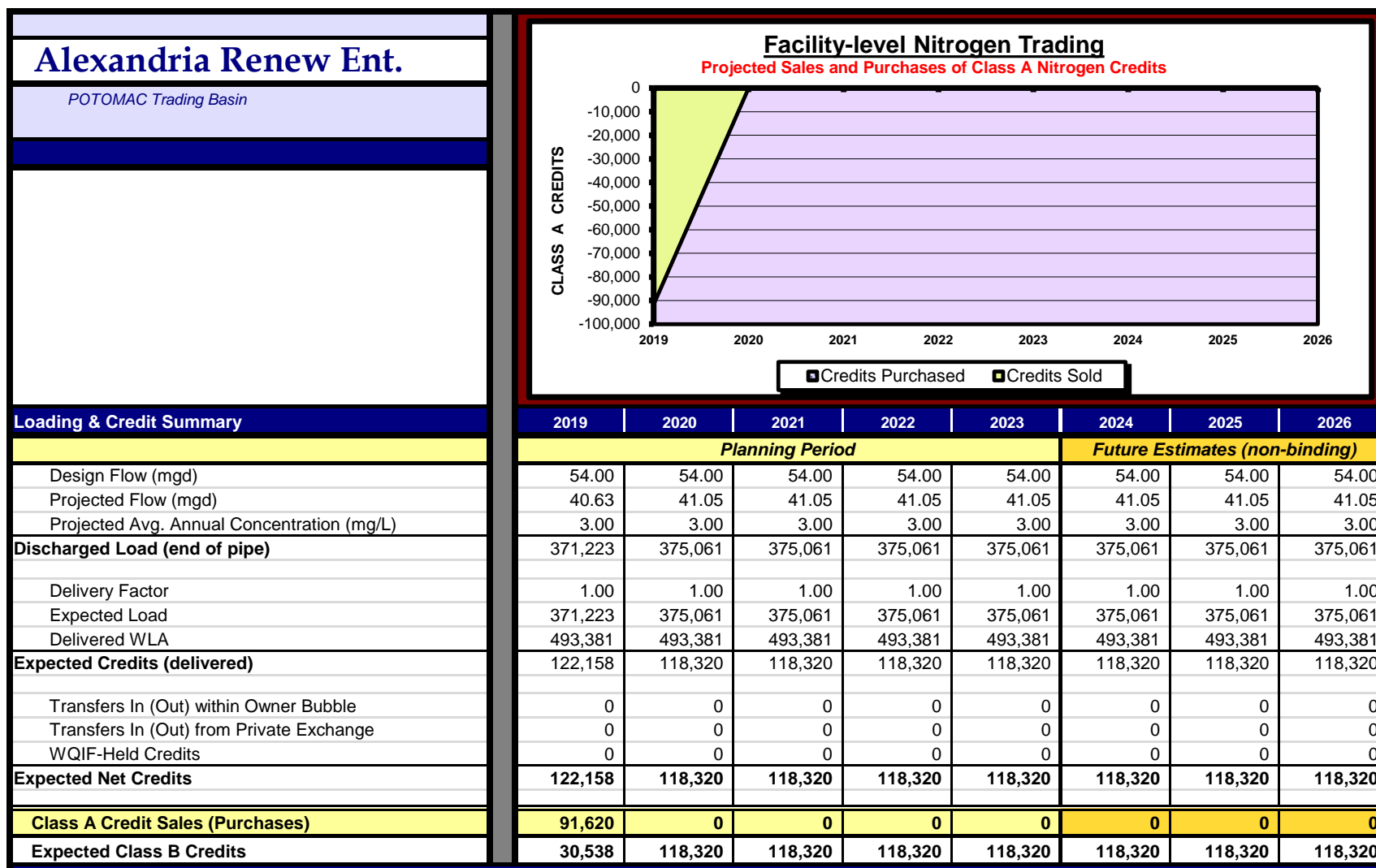
ACSA-Weyers Cave								
POTOMAC Trading Basin								
<b>Loading &amp; Credit Summary</b>								
Design Flow (mgd)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Projected Flow (mgd)	0.37	0.38	0.39	0.41	0.37	0.38	0.39	0.40
Projected Avg. Annual Concentration (mg/L)	2.46	2.46	2.46	2.46	2.70	2.70	2.70	2.70
<b>Discharged Load (end of pipe)</b>	2,782	2,865	2,951	3,072	3,043	3,125	3,207	3,289
Delivery Factor	0.53	0.53	0.47	0.47	0.47	0.47	0.47	0.47
Expected Load	1,474	1,519	1,387	1,444	1,430	1,469	1,507	1,546
Delivered WLA	242	242	215	215	215	215	215	215
<b>Expected Credits (delivered)</b>	(1,232)	(1,277)	(1,172)	(1,229)	(1,215)	(1,254)	(1,292)	(1,331)
Transfers In (Out) within Owner Bubble	1,232	1,277	1,172	1,229	1,215	1,254	1,292	1,331
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	0	0	0	0	0	0	0	0
<b>Class A Credit Sales (Purchases)</b>	0	0	0	0	0	0	0	0
<b>Expected Class B Credits</b>	0	0	0	0	0	0	0	0

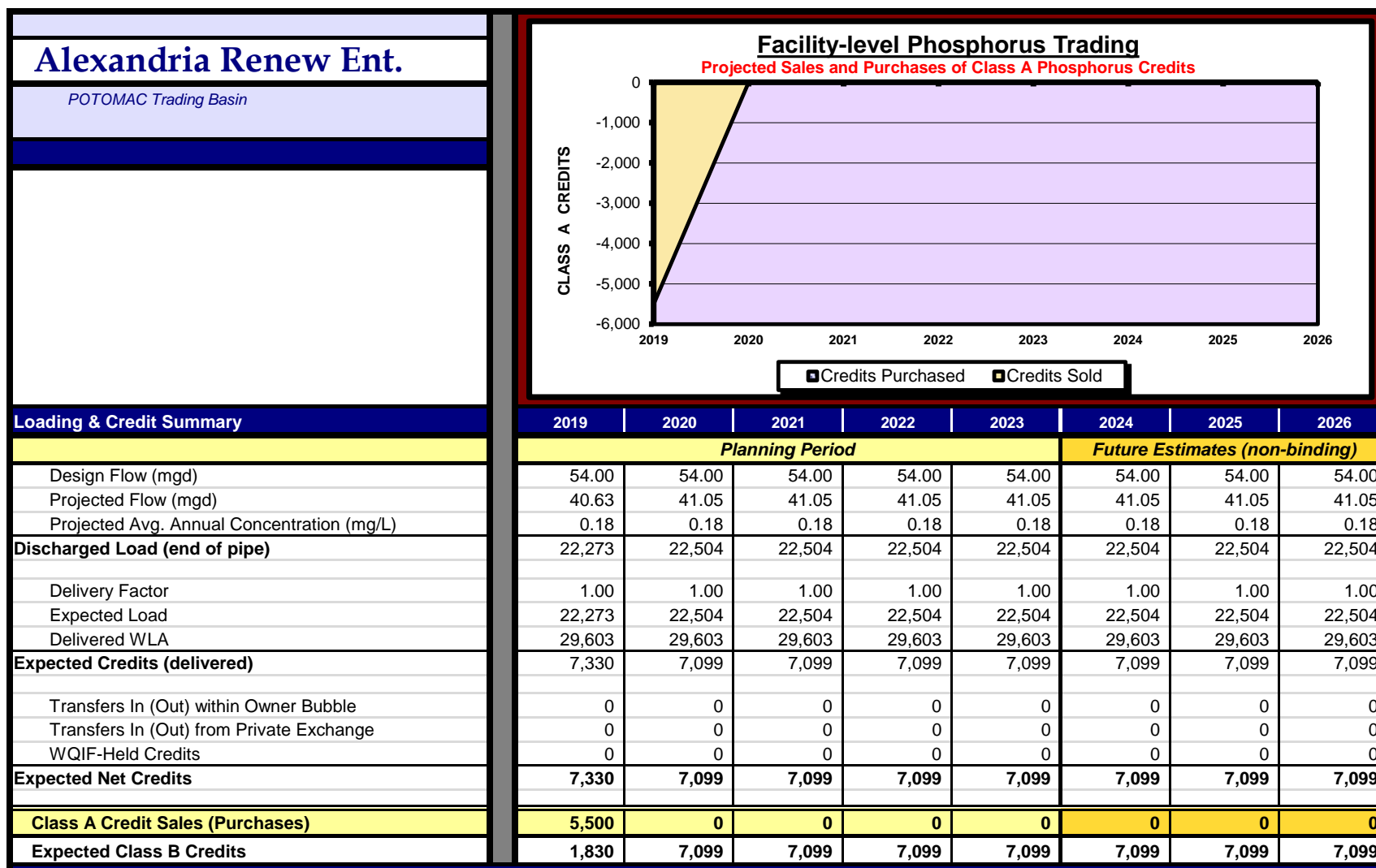
The chart displays the facility-level phosphorus trading over an eight-year period from 2019 to 2026. The y-axis represents 'CLASS A CREDITS' ranging from -1 to 1. The x-axis shows the years. A legend indicates that blue bars represent 'Credits Purchased' and red bars represent 'Credits Sold'. The chart shows significant purchasing activity in the early years (2019-2021), followed by a period of net selling or zero activity from 2022 onwards.

Year	Credits Purchased	Credits Sold
2019	-0.50	0.00
2020	-0.37	0.00
2021	-0.39	0.00
2022	0.00	0.41
2023	0.00	0.37
2024	0.00	0.38
2025	0.00	0.39
2026	0.00	0.40

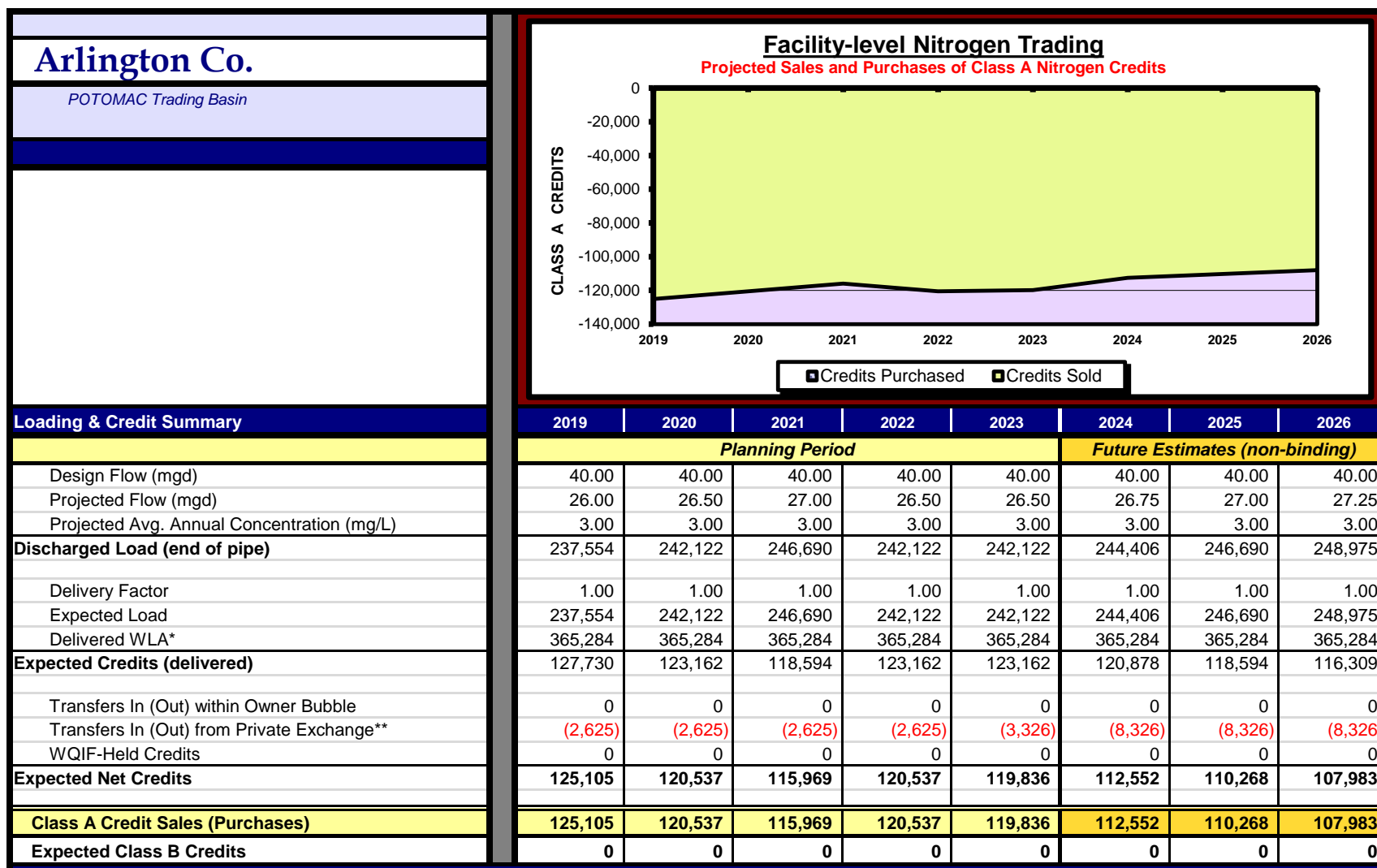
## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



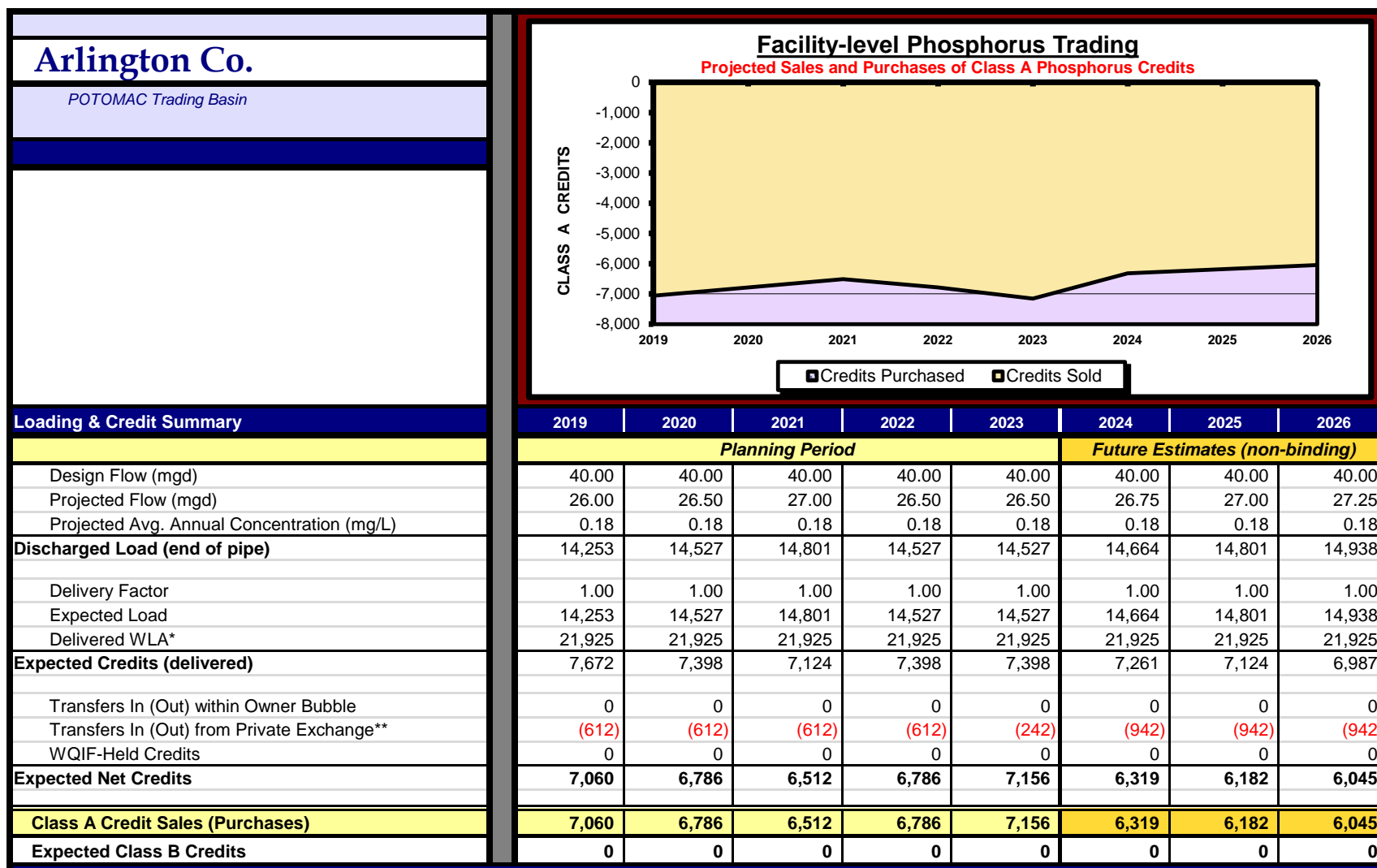
## NITROGEN FACILITY SUMMARY



\* Reflects allocation transfer to George Mason University of 183 delivered pounds of TN (contract renewal beyond 2021 is pending)

\*\* Reflects use of Credits for Arlington County and Arlington County Public Schools stormwater programs

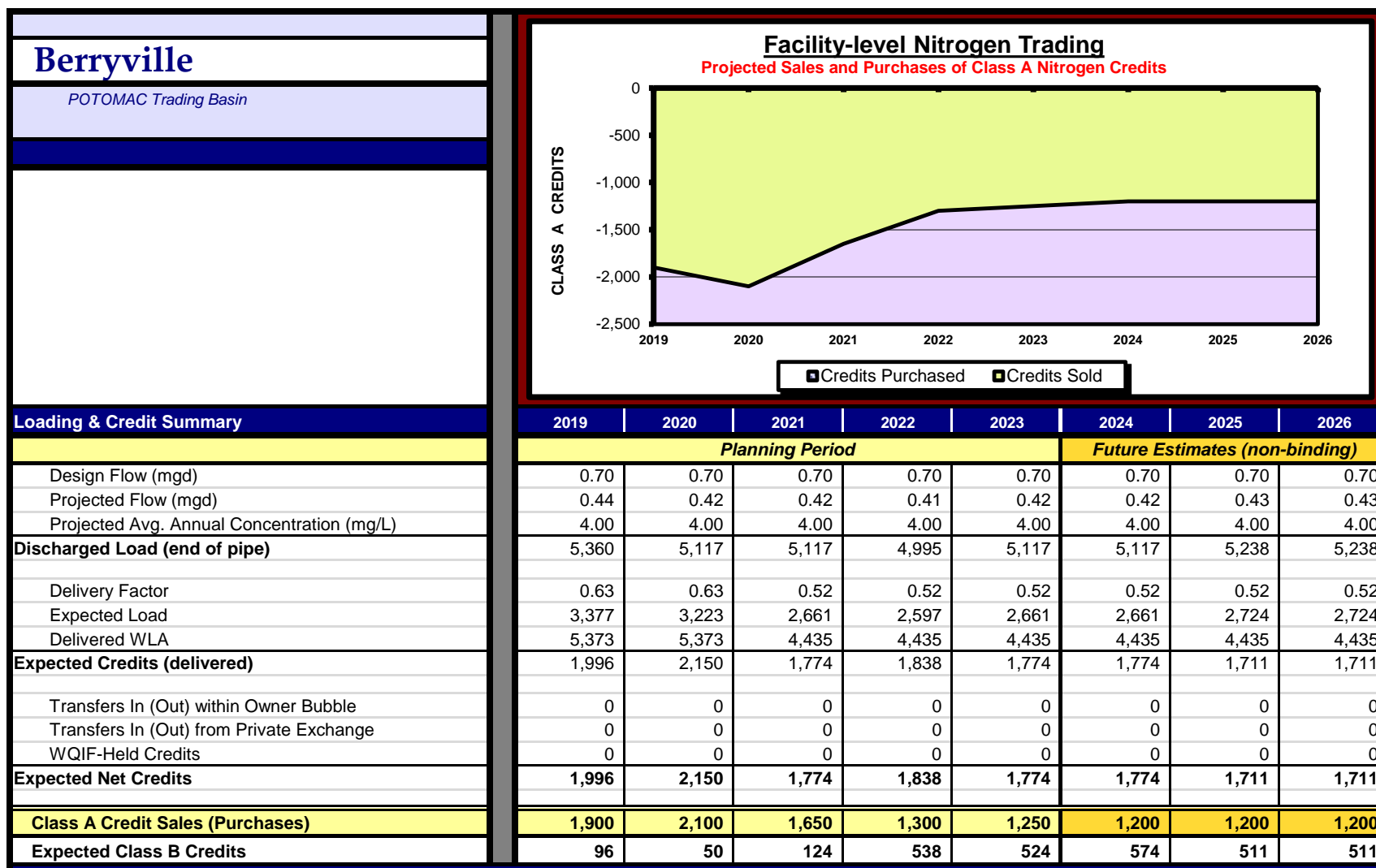
## PHOSPHORUS FACILITY SUMMARY



\* Reflects allocation transfer to George Mason University of 3 delivered pounds of TP (contract renewal beyond 2021 is pending)

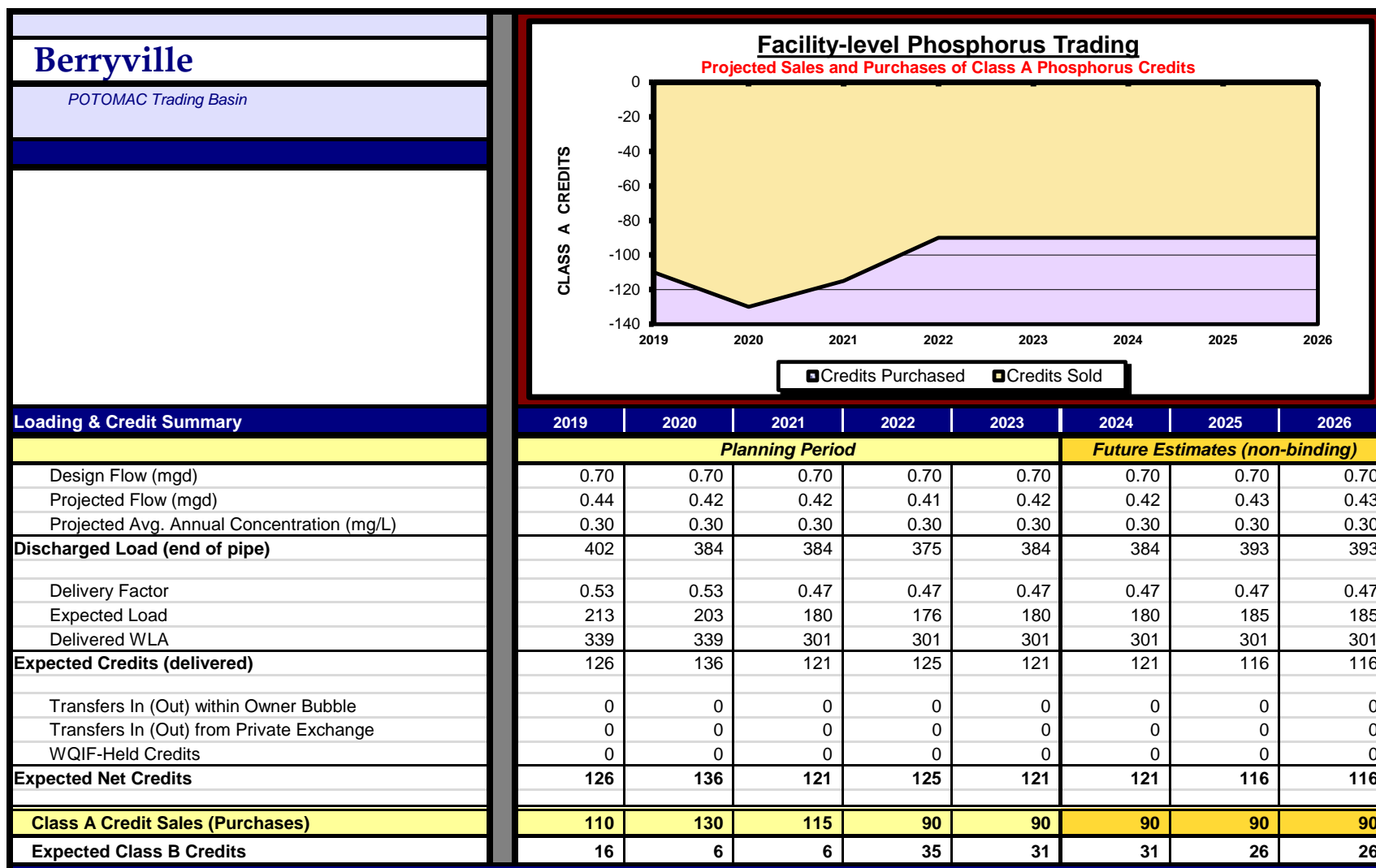
\*\* Reflects use of Credits for Arlington County and Arlington County Public Schools stormwater programs

## NITROGEN FACILITY SUMMARY

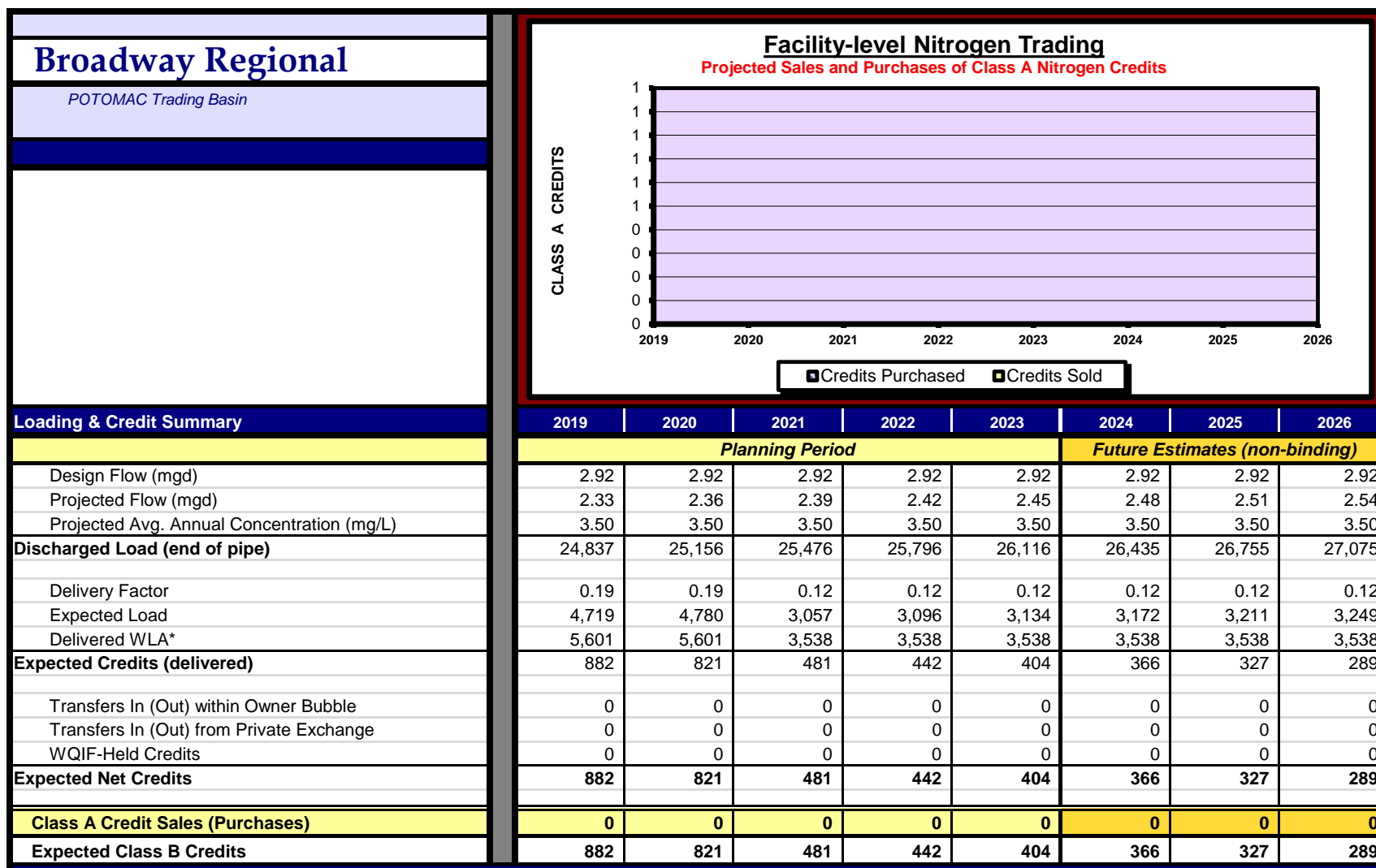




## PHOSPHORUS FACILITY SUMMARY

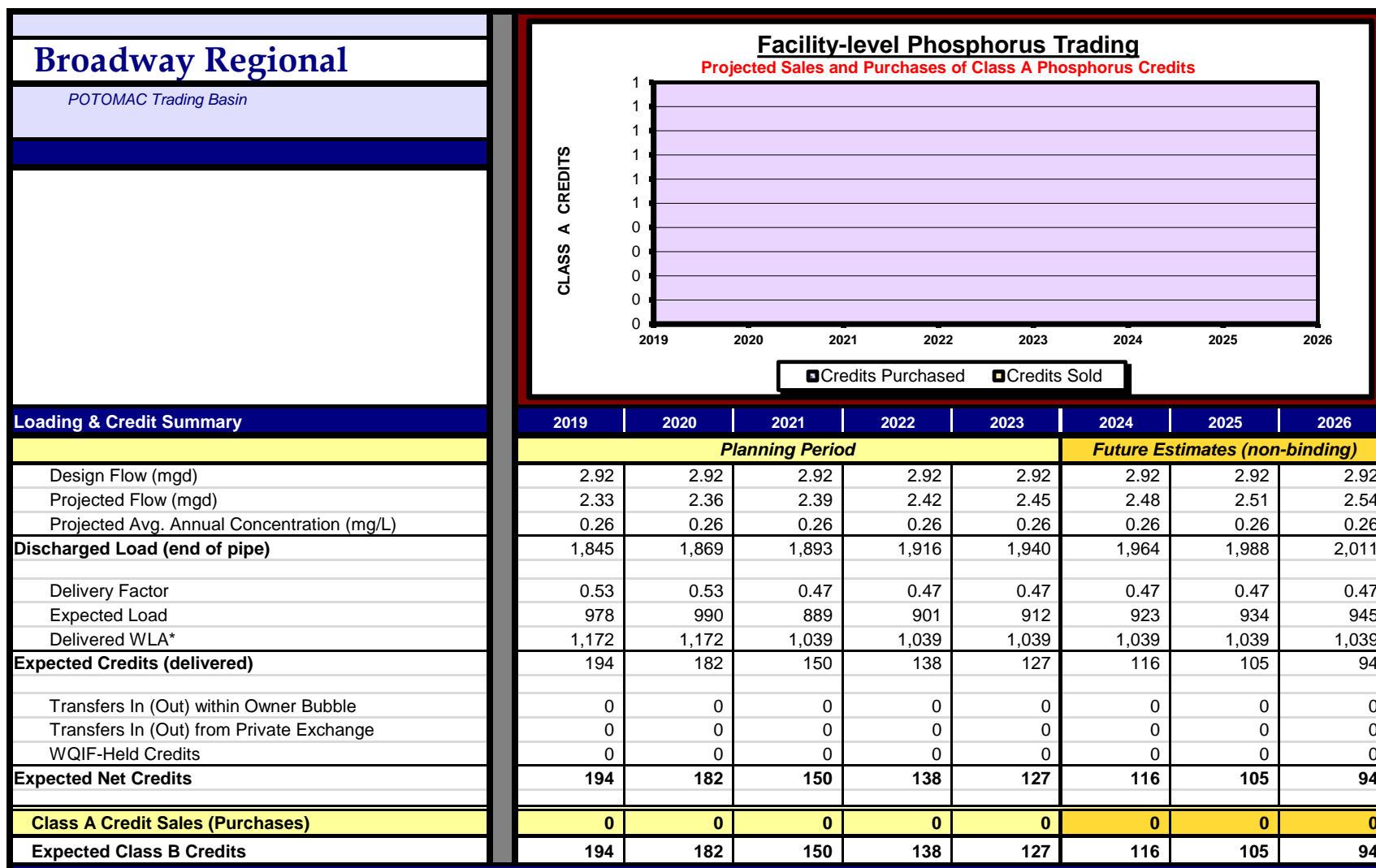


## NITROGEN FACILITY SUMMARY



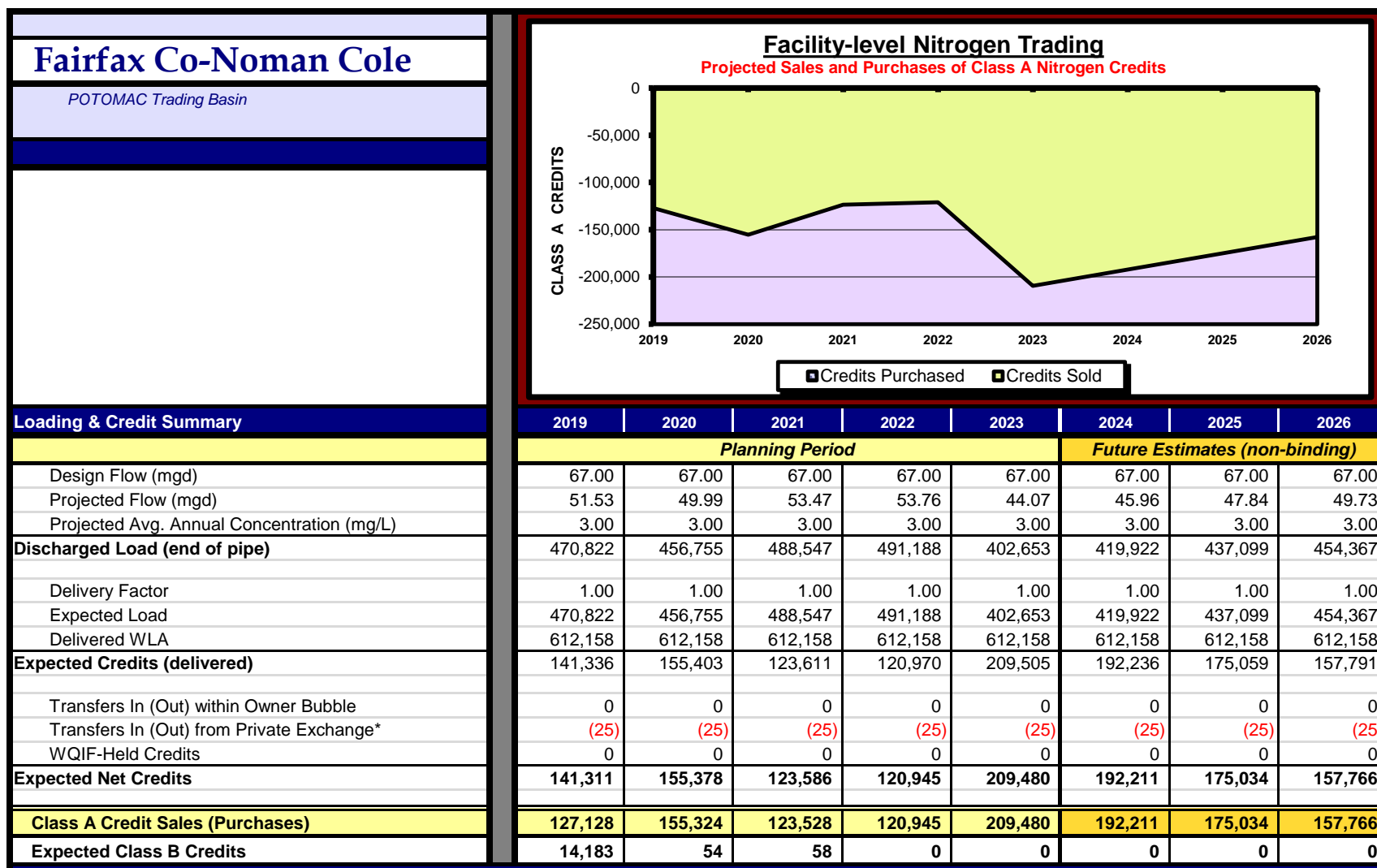
\* Reflects allocation transfer from the Town of New Market of 6,091 discharged pounds of TN according to agreement dated August 5, 2008

## PHOSPHORUS FACILITY SUMMARY



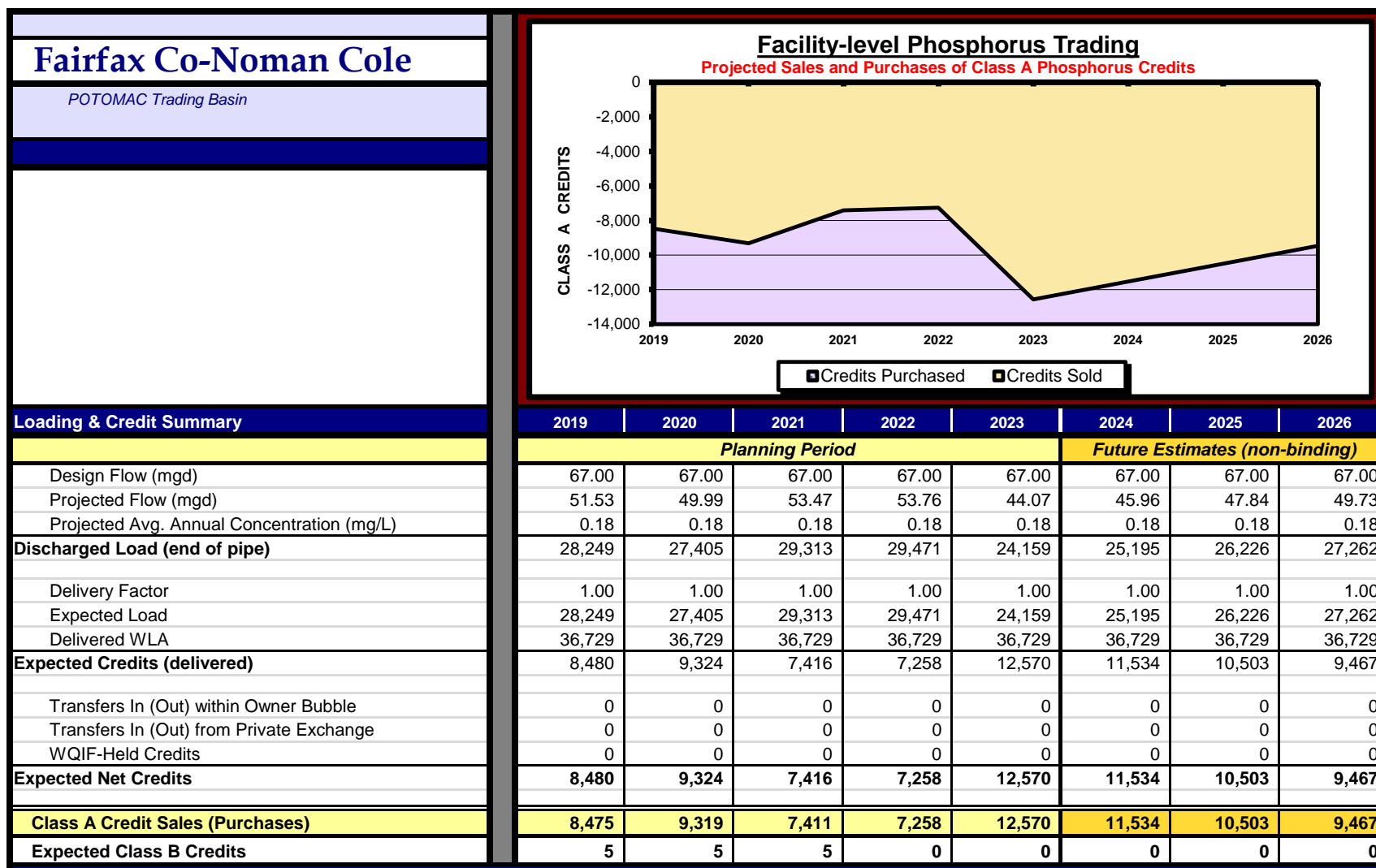
\* Reflects allocation transfer from the Town of New Market of 457 discharged pounds of TP according to agreement dated August 5, 2008

## NITROGEN FACILITY SUMMARY



\* Represents private trade with Fairfax County Department of Vehicle Services

## PHOSPHORUS FACILITY SUMMARY



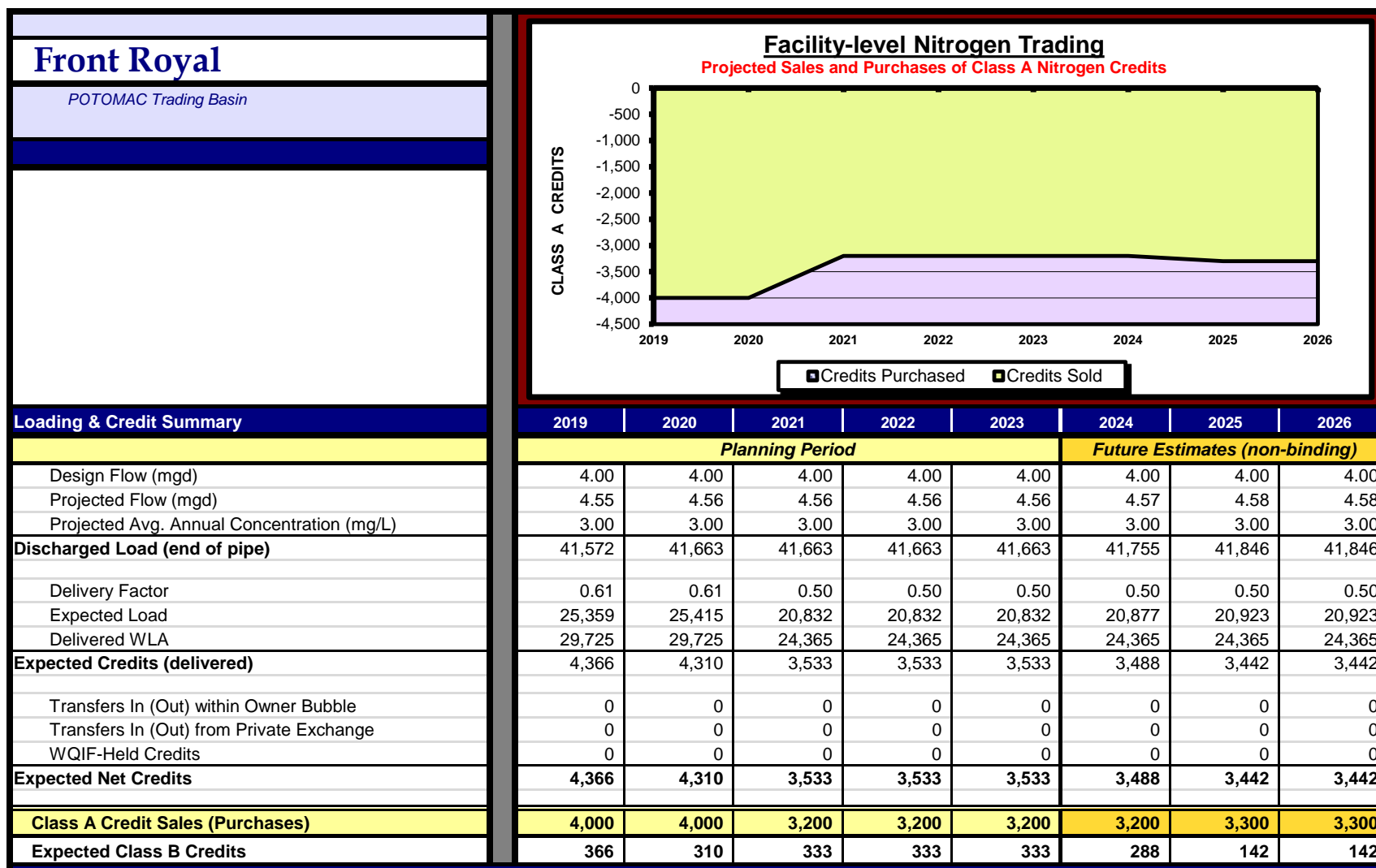
## NITROGEN FACILITY SUMMARY

<div>FCWSA-Vint Hill</div> <div>POTOMAC Trading Basin</div>		<div>Facility-level Nitrogen Trading</div> <div>Projected Sales and Purchases of Class A Nitrogen Credits</div> <div></div>							
Loading & Credit Summary									
		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Projected Flow (mgd)		0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.54
Projected Avg. Annual Concentration (mg/L)		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Discharged Load (end of pipe)		4,873	5,117	5,360	5,604	5,847	6,091	6,335	6,578
Delivery Factor		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Expected Load		244	256	268	280	292	305	317	329
Delivered WLA		579	579	579	579	579	579	579	579
Expected Credits (delivered)		335	323	311	299	287	274	262	250
Transfers In (Out) within Owner Bubble		0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		335	323	311	299	287	274	262	250
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		335	323	311	299	287	274	262	250

## PHOSPHORUS FACILITY SUMMARY

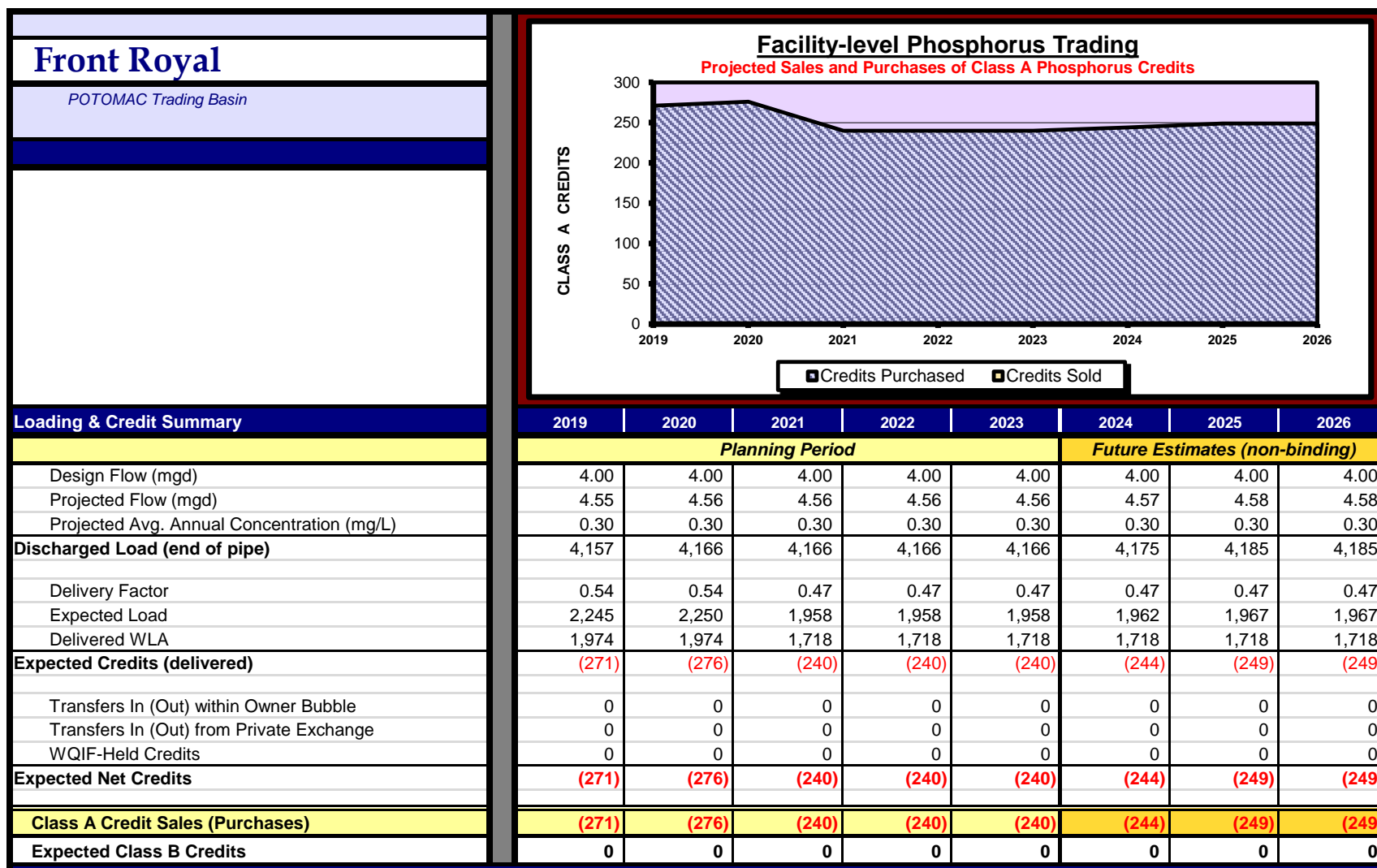
FCWSA-Vint Hill	
POTOMAC Trading Basin	

## NITROGEN FACILITY SUMMARY





## PHOSPHORUS FACILITY SUMMARY



## Owner Bubble: Frederick-Winchester Service Authority

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

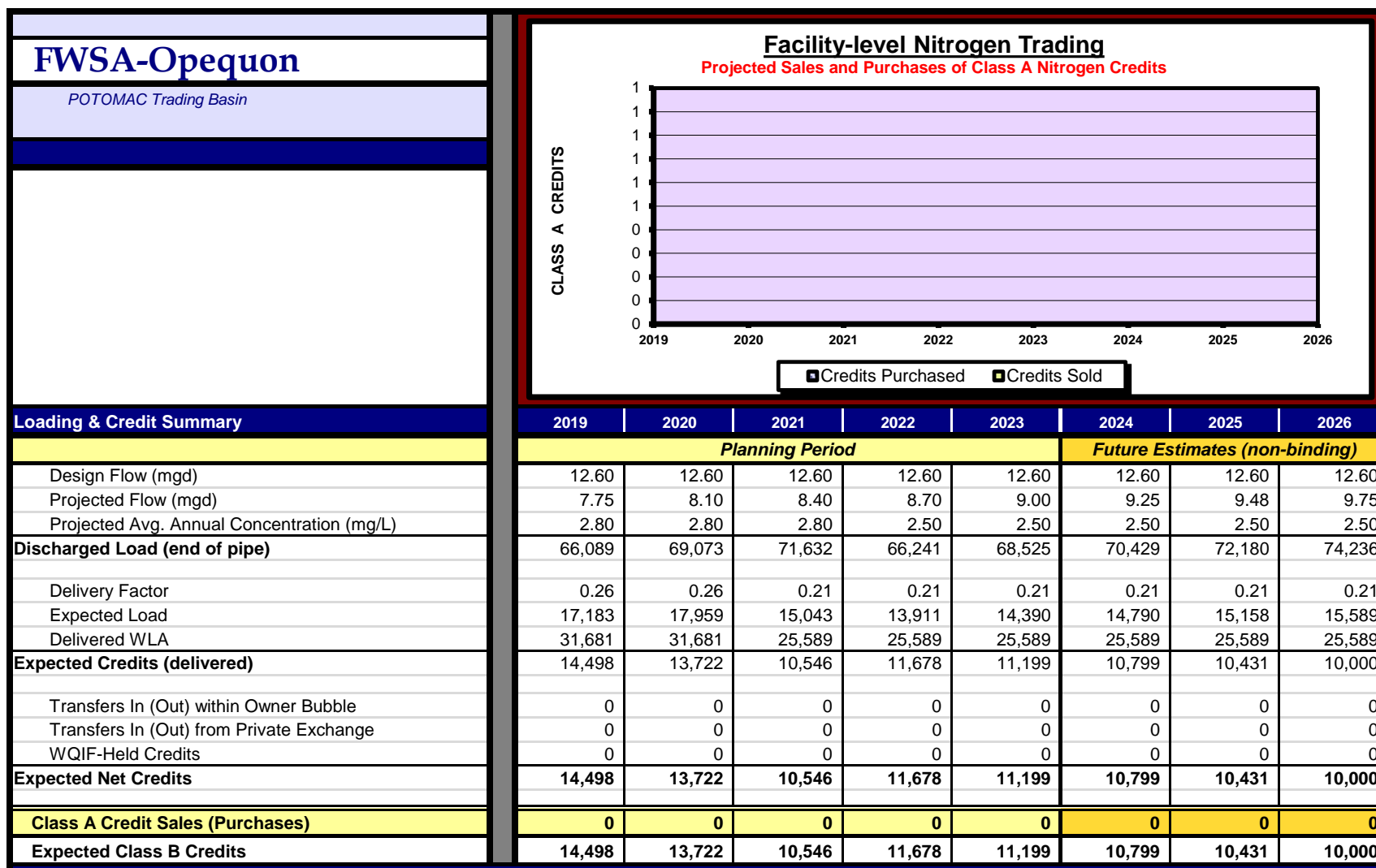
The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

<b>NITROGEN Credits</b>		<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Opequon		-	-	-	-	-	-	-	-
Parkins Mill		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>		-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Opequon		14,498	13,722	10,546	11,678	11,199	10,799	10,431	10,000
Parkins Mill		9,304	8,473	6,363	5,884	5,596	5,212	5,020	4,732
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>		<b>23,802</b>	<b>22,195</b>	<b>16,909</b>	<b>17,562</b>	<b>16,795</b>	<b>16,011</b>	<b>15,451</b>	<b>14,732</b>
<b>Class A Sales (Purchases)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<i>Expected Class B Credits</i>		<i>23,802</i>	<i>22,195</i>	<i>16,909</i>	<i>17,562</i>	<i>16,795</i>	<i>16,011</i>	<i>15,451</i>	<i>14,732</i>
<i>WQIF-Held Credits</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

<b>PHOSPHORUS Credits</b>		<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Opequon		-	-	-	-	-	-	-	-
Parkins Mill		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>		-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Opequon		3,031	2,887	2,405	2,298	2,190	2,101	2,019	1,922
Parkins Mill		1,110	938	708	601	537	451	408	343
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>		<b>4,141</b>	<b>3,825</b>	<b>3,113</b>	<b>2,899</b>	<b>2,727</b>	<b>2,552</b>	<b>2,427</b>	<b>2,265</b>
<b>Class A Sales (Purchases)</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<i>Expected Class B Credits</i>		<i>4,141</i>	<i>3,825</i>	<i>3,113</i>	<i>2,899</i>	<i>2,727</i>	<i>2,552</i>	<i>2,427</i>	<i>2,265</i>
<i>WQIF-Held Credits</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

## NITROGEN FACILITY SUMMARY



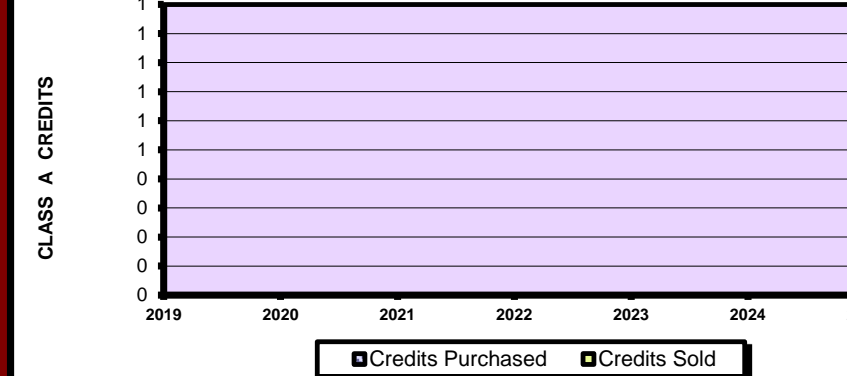
## NITROGEN FACILITY SUMMARY

## FWSA-Parkins Mill

POTOMAC Trading Basin

### Facility-level Nitrogen Trading

Projected Sales and Purchases of Class A Nitrogen Credits



Loading & Credit Summary								
	2019	2020	2021	2022	2023	2024	2025	2026
Planning Period					Future Estimates (non-binding)			
Design Flow (mgd)	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Projected Flow (mgd)	2.75	3.10	3.35	3.60	3.75	3.95	4.05	4.20
Projected Avg. Annual Concentration (mg/L)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
<b>Discharged Load (end of pipe)</b>	<b>25,126</b>	<b>28,324</b>	<b>30,608</b>	<b>32,892</b>	<b>34,263</b>	<b>36,090</b>	<b>37,004</b>	<b>38,374</b>
Delivery Factor	0.26	0.26	0.21	0.21	0.21	0.21	0.21	0.21
Expected Load	6,533	7,364	6,428	6,907	7,195	7,579	7,771	8,059
Delivered WLA	15,837	15,837	12,791	12,791	12,791	12,791	12,791	12,791
<b>Expected Credits (delivered)</b>	<b>9,304</b>	<b>8,473</b>	<b>6,363</b>	<b>5,884</b>	<b>5,596</b>	<b>5,212</b>	<b>5,020</b>	<b>4,732</b>
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	<b>9,304</b>	<b>8,473</b>	<b>6,363</b>	<b>5,884</b>	<b>5,596</b>	<b>5,212</b>	<b>5,020</b>	<b>4,732</b>
<b>Class A Credit Sales (Purchases)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Expected Class B Credits</b>	<b>9,304</b>	<b>8,473</b>	<b>6,363</b>	<b>5,884</b>	<b>5,596</b>	<b>5,212</b>	<b>5,020</b>	<b>4,732</b>

## PHOSPHORUS FACILITY SUMMARY

## FWSA-Opequon

POTOMAC Trading Basin

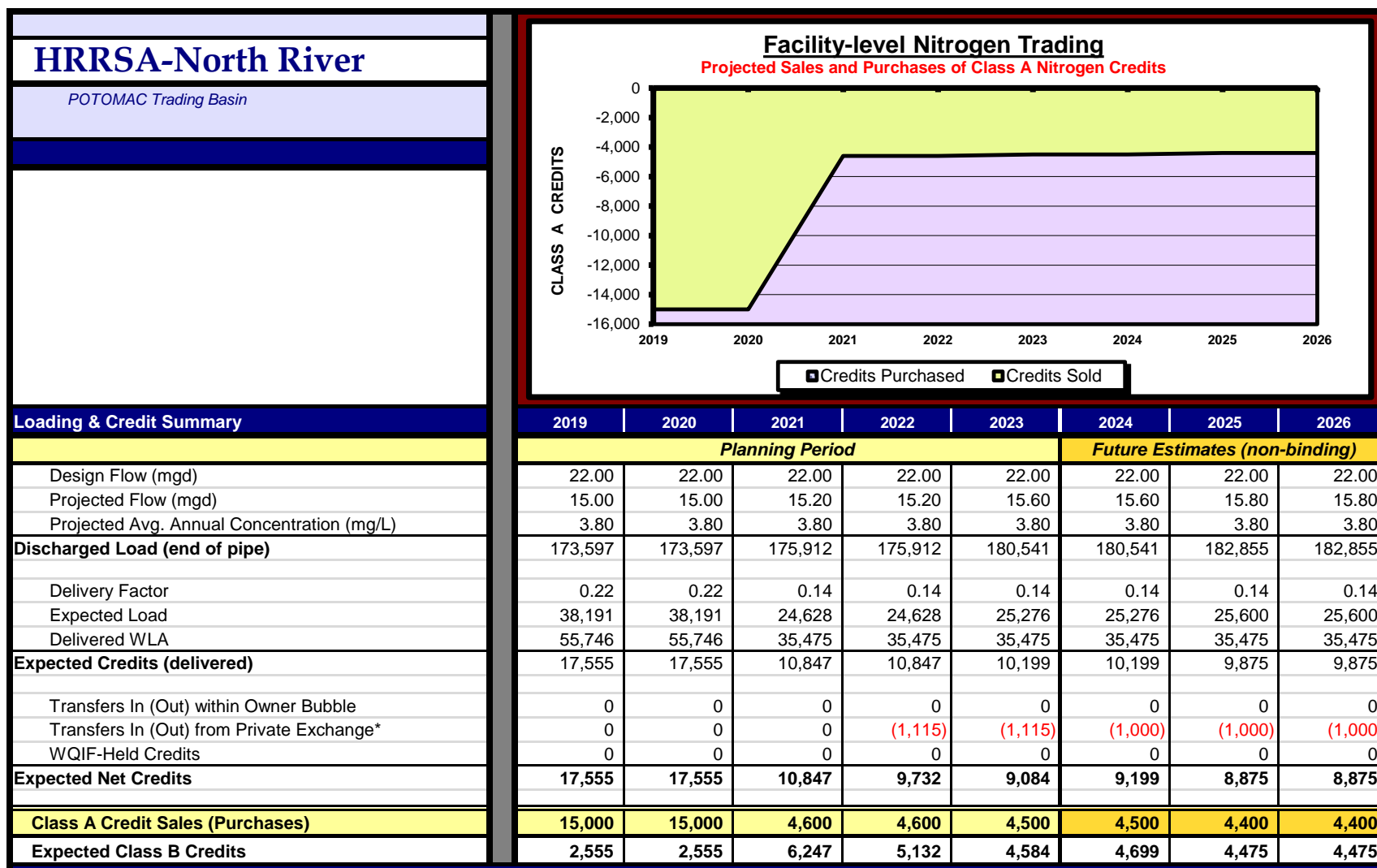
Year	Credits Purchased	Credits Sold
2019	0	1.00
2020	0	1.00
2021	0	1.00
2022	0	1.00
2023	0	1.00
2024	0	1.00
2025	0	1.00
2026	0	1.00

Loading & Credit Summary								
	2019	2020	2021	2022	2023	2024	2025	2026
<b>Planning Period</b>								
Design Flow (mgd)	12.60	12.60	12.60	12.60	12.60	12.60	12.60	12.60
Projected Flow (mgd)	7.75	8.10	8.40	8.70	9.00	9.25	9.48	9.75
Projected Avg. Annual Concentration (mg/L)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
<b>Discharged Load (end of pipe)</b>	5,901	6,167	6,396	6,624	6,853	7,043	7,218	7,424
Delivery Factor	0.54	0.54	0.47	0.47	0.47	0.47	0.47	0.47
Expected Load	3,186	3,330	3,006	3,113	3,221	3,310	3,392	3,489
Delivered WLA	6,217	6,217	5,411	5,411	5,411	5,411	5,411	5,411
<b>Expected Credits (delivered)</b>	3,031	2,887	2,405	2,298	2,190	2,101	2,019	1,922
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	3,031	2,887	2,405	2,298	2,190	2,101	2,019	1,922
<b>Class A Credit Sales (Purchases)</b>	0	0	0	0	0	0	0	0
<b>Expected Class B Credits</b>	3,031	2,887	2,405	2,298	2,190	2,101	2,019	1,922

## PHOSPHORUS FACILITY SUMMARY

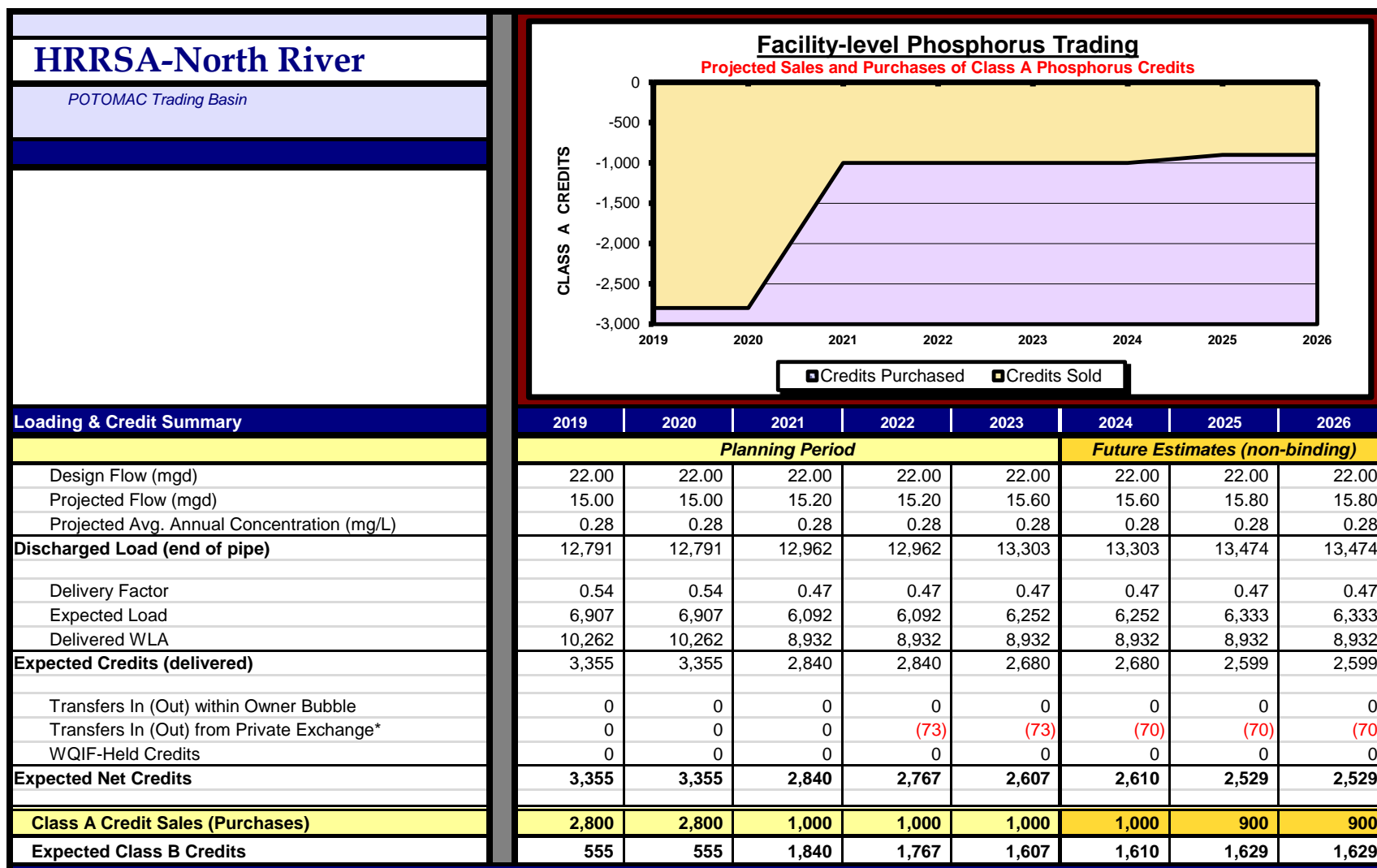
FWSA-Parkins Mill		<div> <div>Facility-level Phosphorus Trading</div> <div>Projected Sales and Purchases of Class A Phosphorus Credits</div> </div>							
POTOMAC Trading Basin		2019	2020	2021	2022	2023	2024	2025	2026
Loading & Credit Summary		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Projected Flow (mgd)		2.75	3.10	3.35	3.60	3.75	3.95	4.05	4.20
Projected Avg. Annual Concentration (mg/L)		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Discharged Load (end of pipe)		2,513	2,832	3,061	3,289	3,426	3,609	3,700	3,837
Delivery Factor		0.54	0.54	0.47	0.47	0.47	0.47	0.47	0.47
Expected Load		1,357	1,529	1,439	1,546	1,610	1,696	1,739	1,804
Delivered WLA		2,467	2,467	2,147	2,147	2,147	2,147	2,147	2,147
Expected Credits (delivered)		1,110	938	708	601	537	451	408	343
Transfers In (Out) within Owner Bubble		0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		1,110	938	708	601	537	451	408	343
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		1,110	938	708	601	537	451	408	343

## NITROGEN FACILITY SUMMARY



\* Represents private trade with City of Harrisonburg to meet MS4 requirements

## PHOSPHORUS FACILITY SUMMARY



\* Represents private trade with City of Harrisonburg to meet MS4 requirements



## Owner Bubble: King George County Service Authority (Potomac)

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

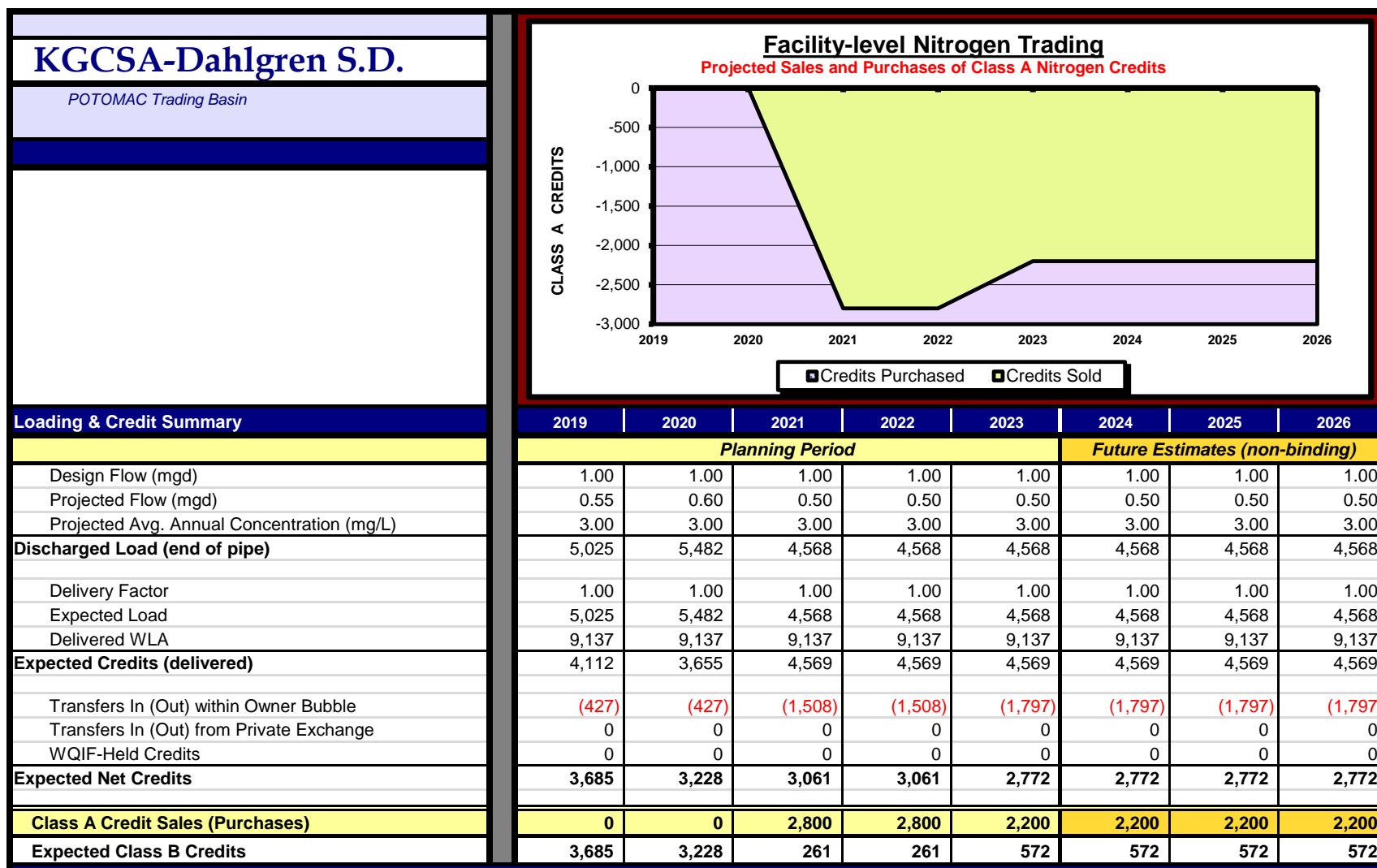
The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

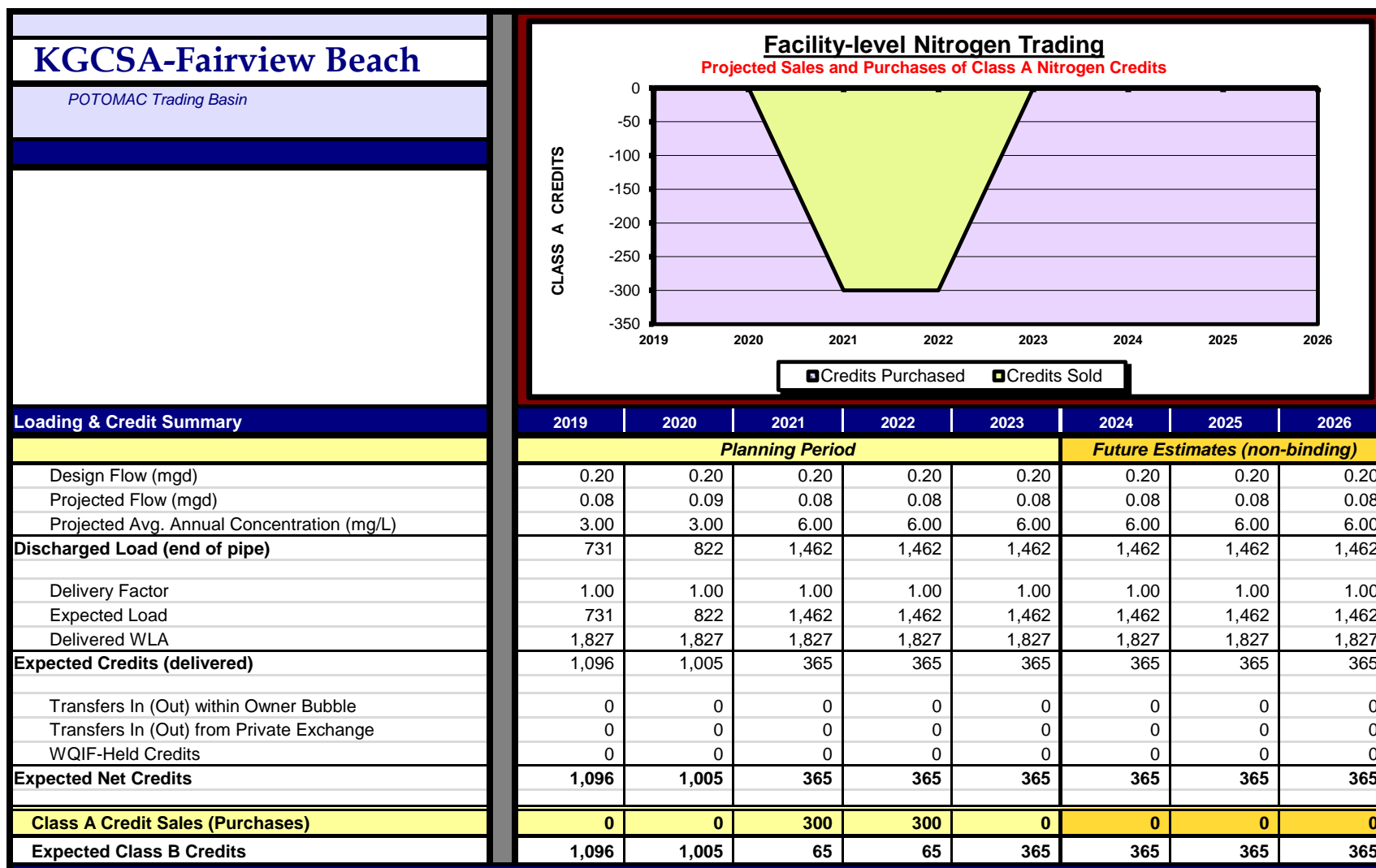
<b>NITROGEN Credits</b>	<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Dahlgren	(427)	(427)	(1,508)	(1,508)	(1,797)	(1,797)	(1,797)	(1,797)
Fairview Beach	-	-	-	-	-	-	-	-
Purkins Corner	427	427	1,508	1,508	1,797	1,797	1,797	1,797
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>	-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Dahlgren	3,685	3,228	3,061	3,061	2,772	2,772	2,772	2,772
Fairview Beach	1,096	1,005	365	365	365	365	365	365
Purkins Corner	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>	<b>4,781</b>	<b>4,233</b>	<b>3,426</b>	<b>3,426</b>	<b>3,137</b>	<b>3,137</b>	<b>3,137</b>	<b>3,137</b>
<b>Class A Sales (Purchases)</b>	<b>0</b>	<b>0</b>	<b>3,100</b>	<b>3,100</b>	<b>2,200</b>	<b>2,200</b>	<b>2,200</b>	<b>2,200</b>
<i>Expected Class B Credits</i>	<i>4,781</i>	<i>4,233</i>	<i>326</i>	<i>326</i>	<i>937</i>	<i>937</i>	<i>937</i>	<i>937</i>
<i>WQIF-Held Credits</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

<b>PHOSPHORUS Credits</b>	<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Dahlgren	(40)	(40)	(137)	(137)	(200)	(200)	(200)	(200)
Fairview Beach	-	-	-	-	36	36	36	36
Purkins Corner	40	40	137	137	164	164	164	164
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>	-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Dahlgren	371	326	320	320	257	257	257	257
Fairview Beach	107	98	-	-	-	-	-	-
Purkins Corner	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>	<b>478</b>	<b>424</b>	<b>320</b>	<b>320</b>	<b>257</b>	<b>257</b>	<b>257</b>	<b>257</b>
<b>Class A Sales (Purchases)</b>	<b>0</b>	<b>0</b>	<b>300</b>	<b>300</b>	<b>200</b>	<b>200</b>	<b>200</b>	<b>200</b>
<i>Expected Class B Credits</i>	<i>478</i>	<i>424</i>	<i>20</i>	<i>20</i>	<i>57</i>	<i>57</i>	<i>57</i>	<i>57</i>
<i>WQIF-Held Credits</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

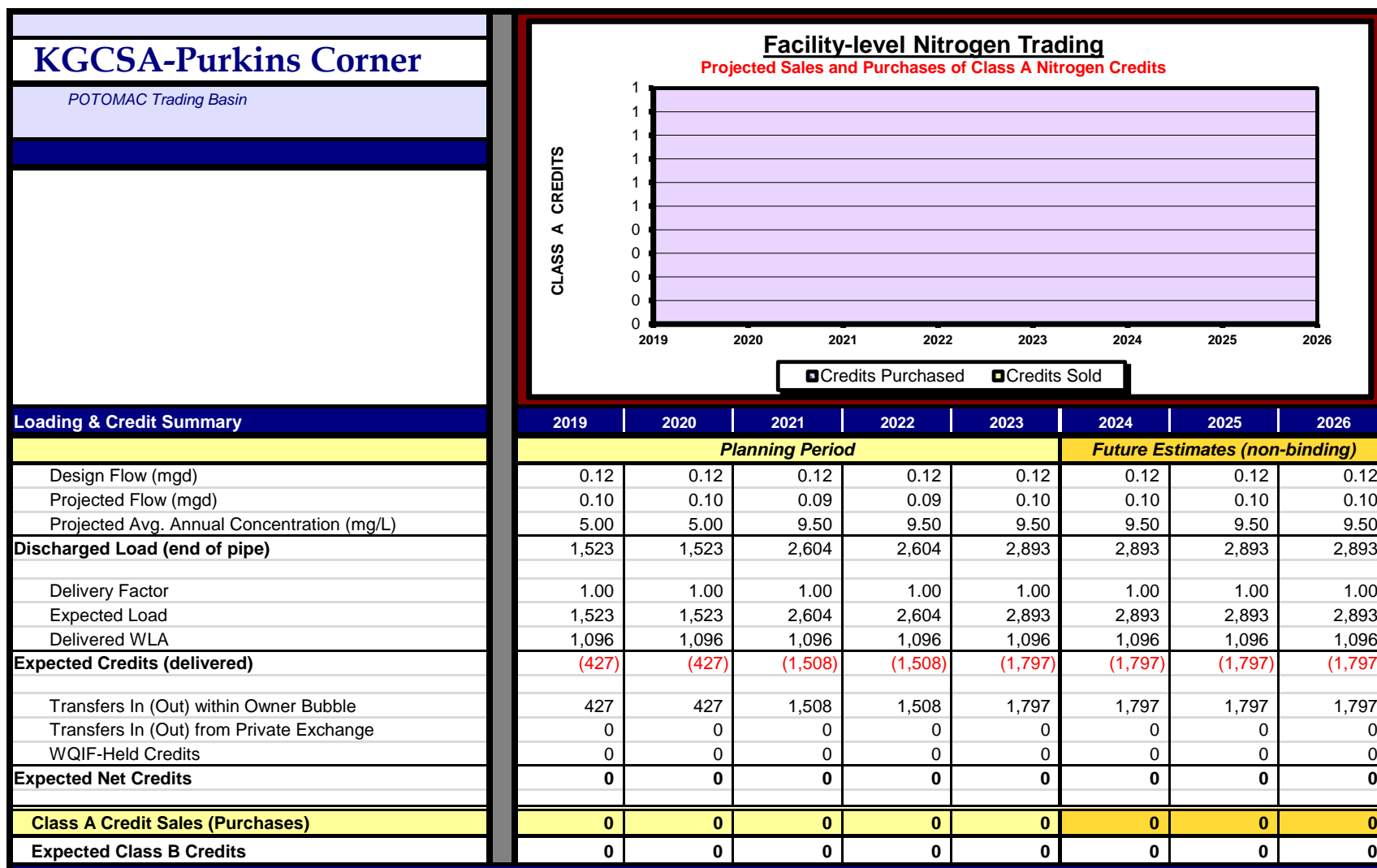
## NITROGEN FACILITY SUMMARY



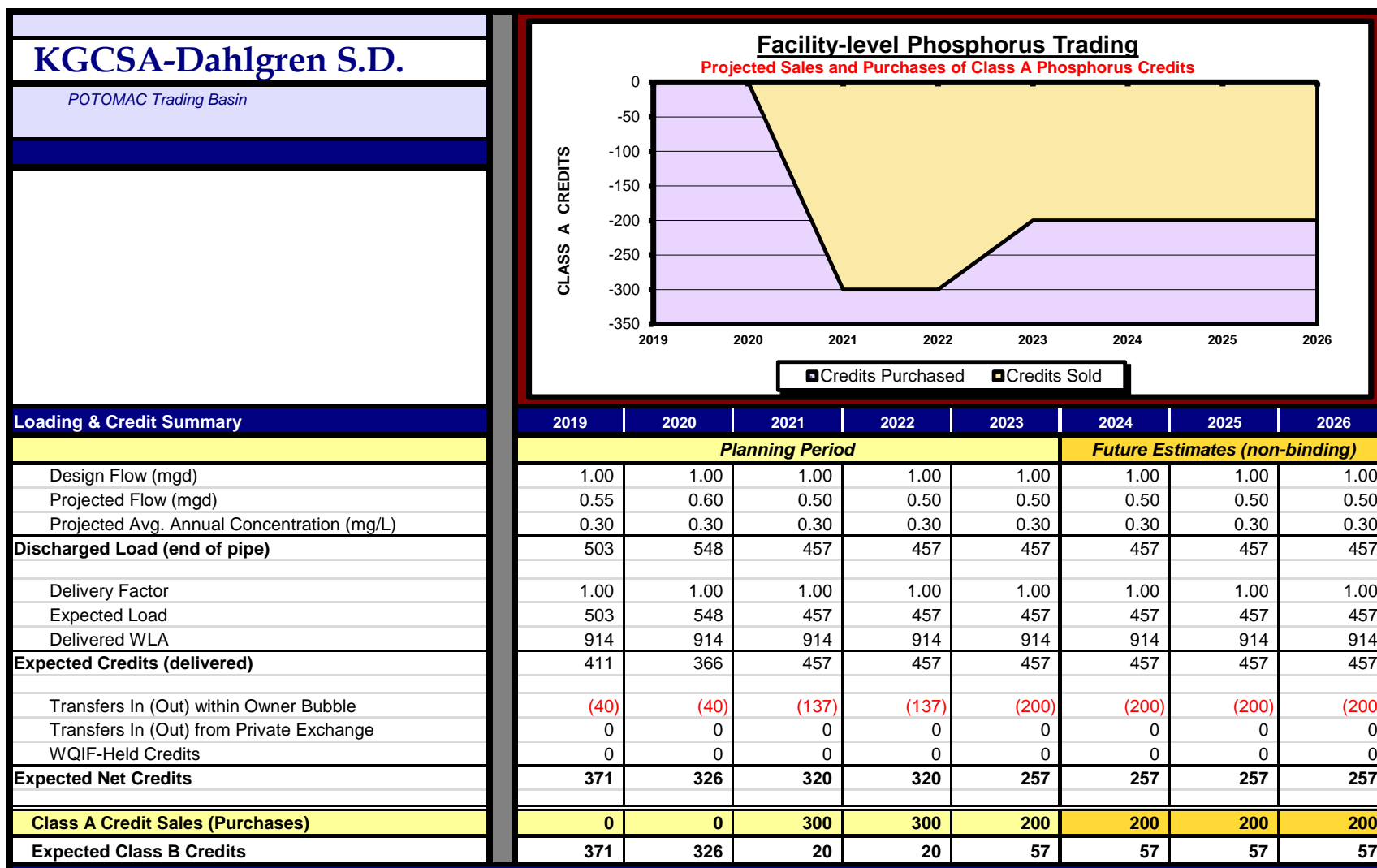
## NITROGEN FACILITY SUMMARY



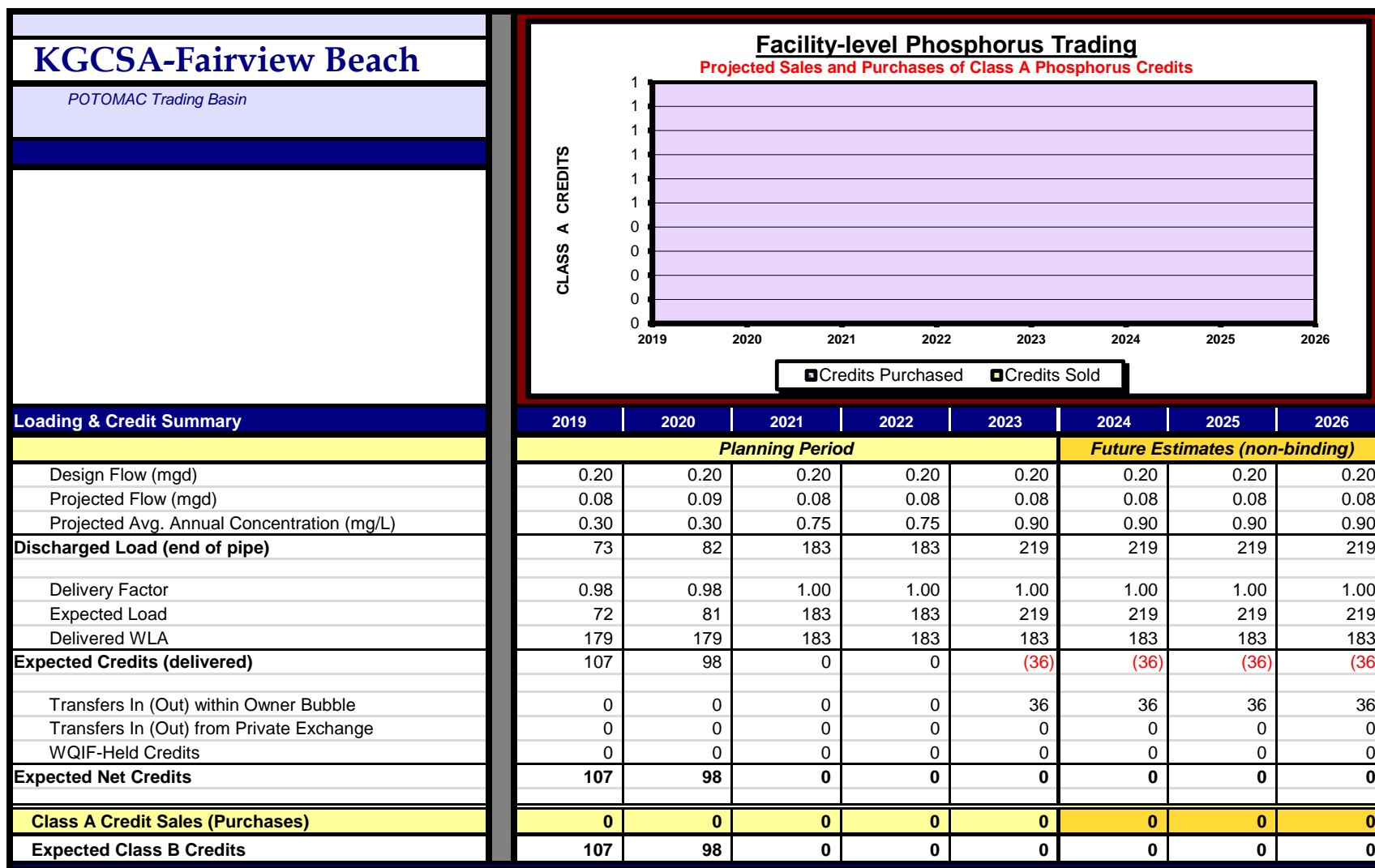
## NITROGEN FACILITY SUMMARY



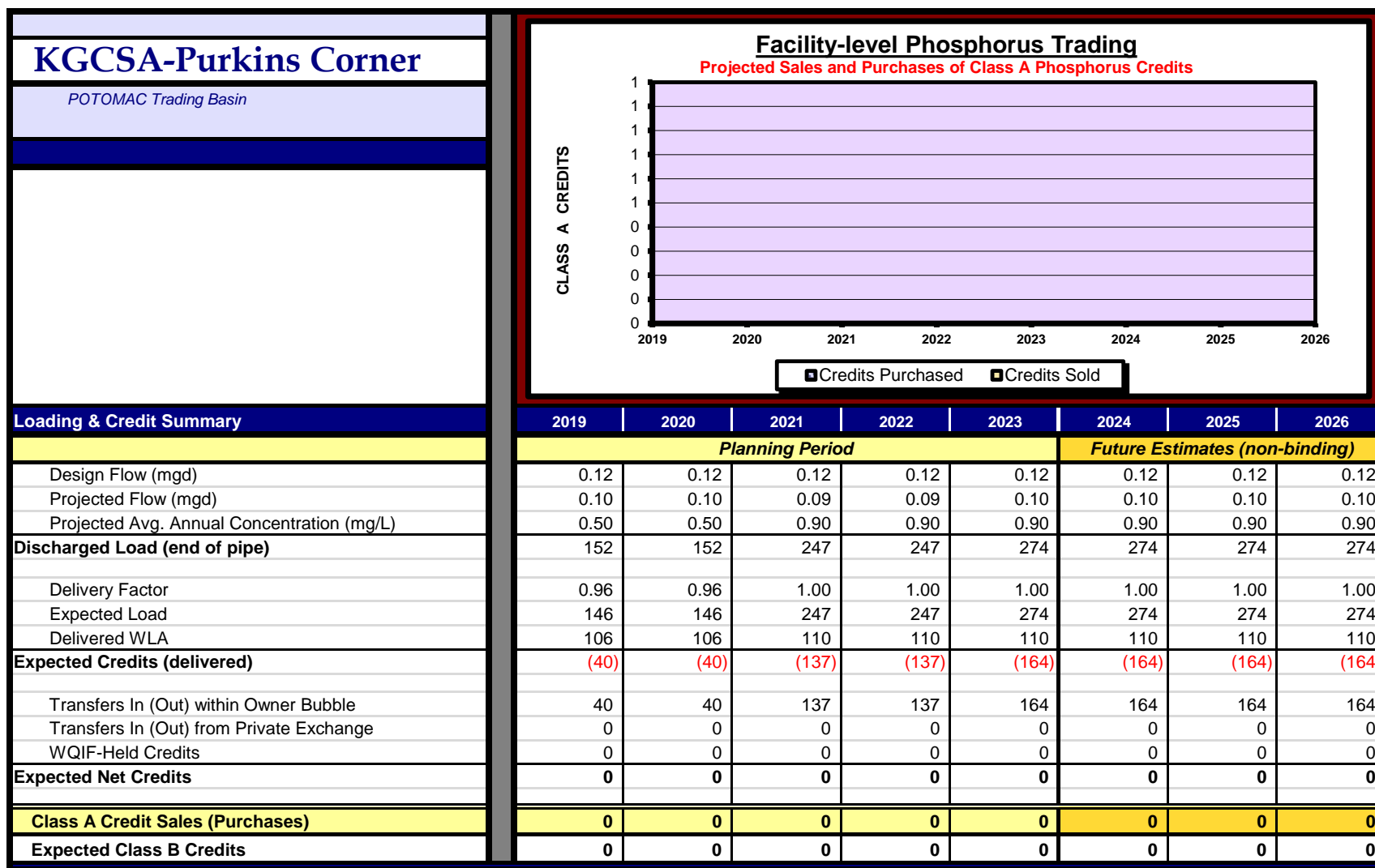
## PHOSPHORUS FACILITY SUMMARY



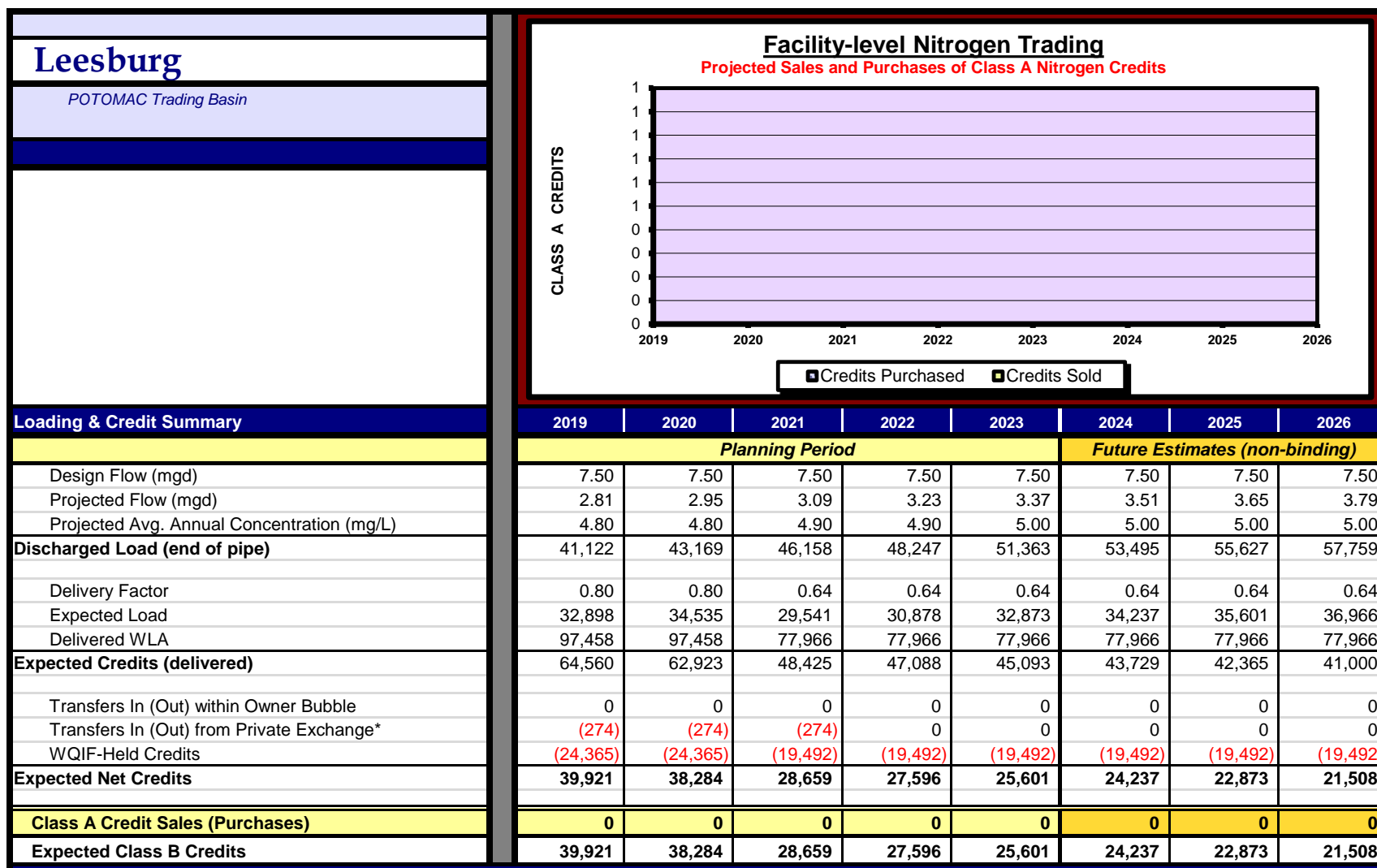
## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



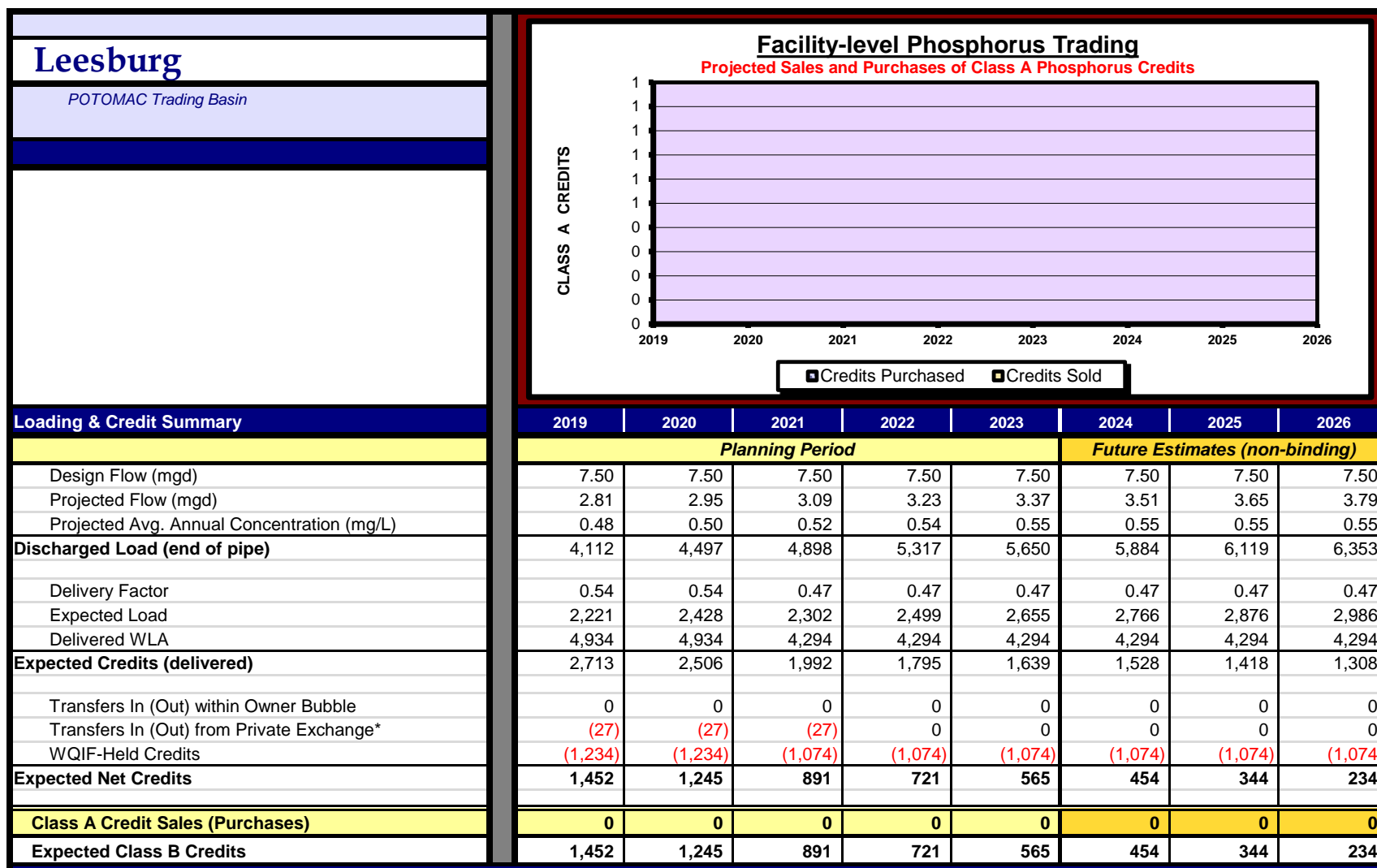
## NITROGEN FACILITY SUMMARY



\* Represents private trade with Loudoun Milling

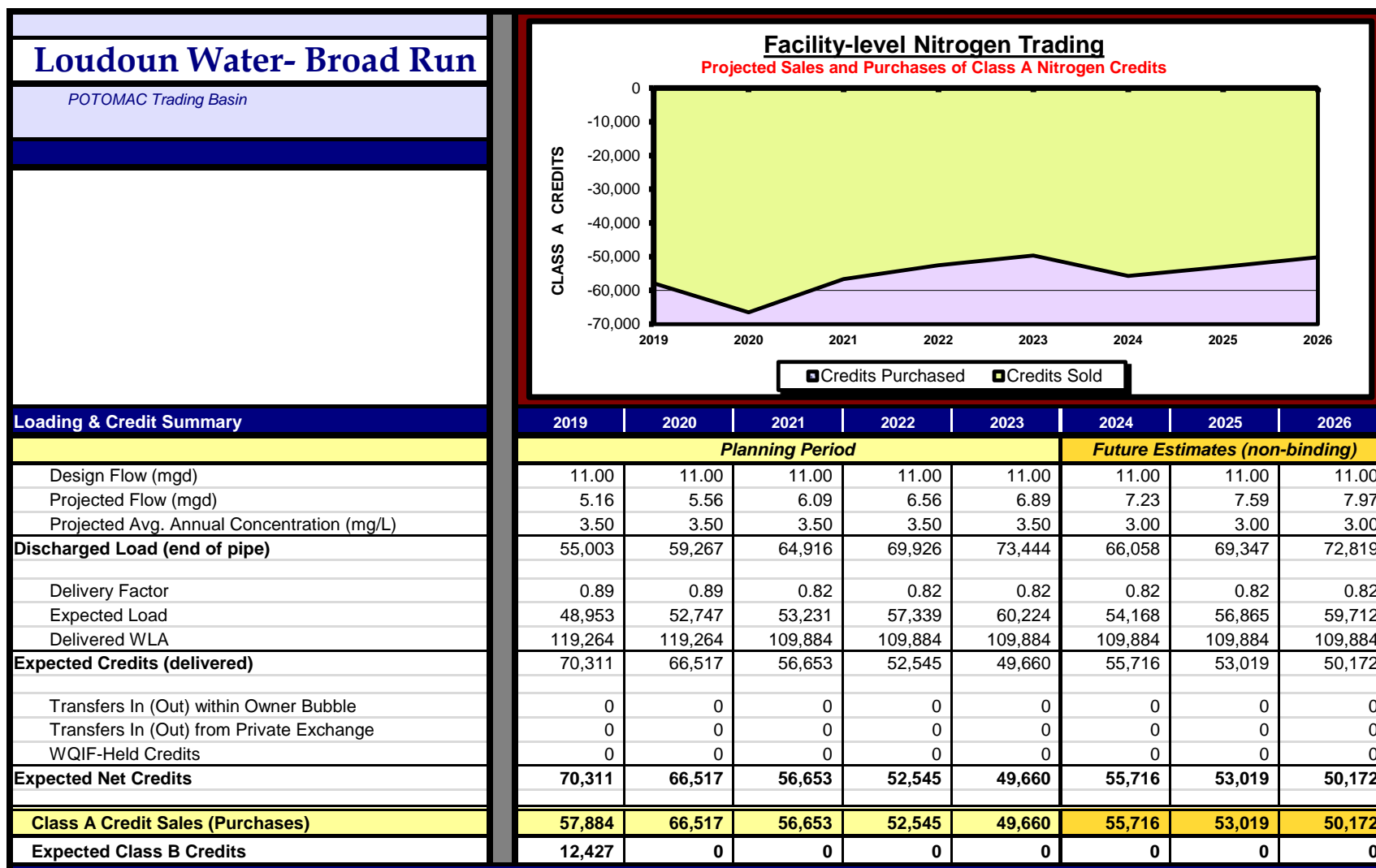


## PHOSPHORUS FACILITY SUMMARY

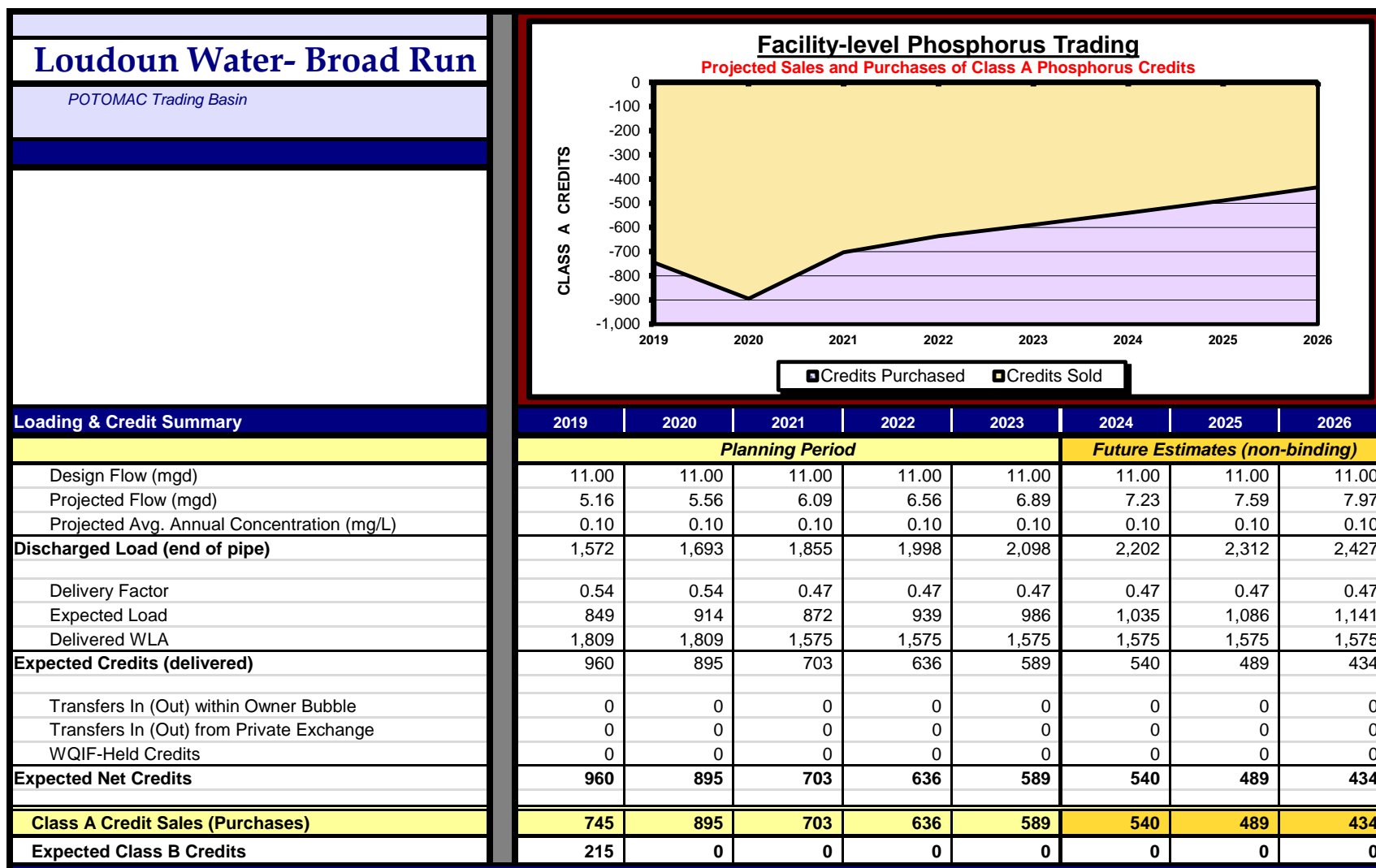


\* Represents private trade with Loudoun Milling

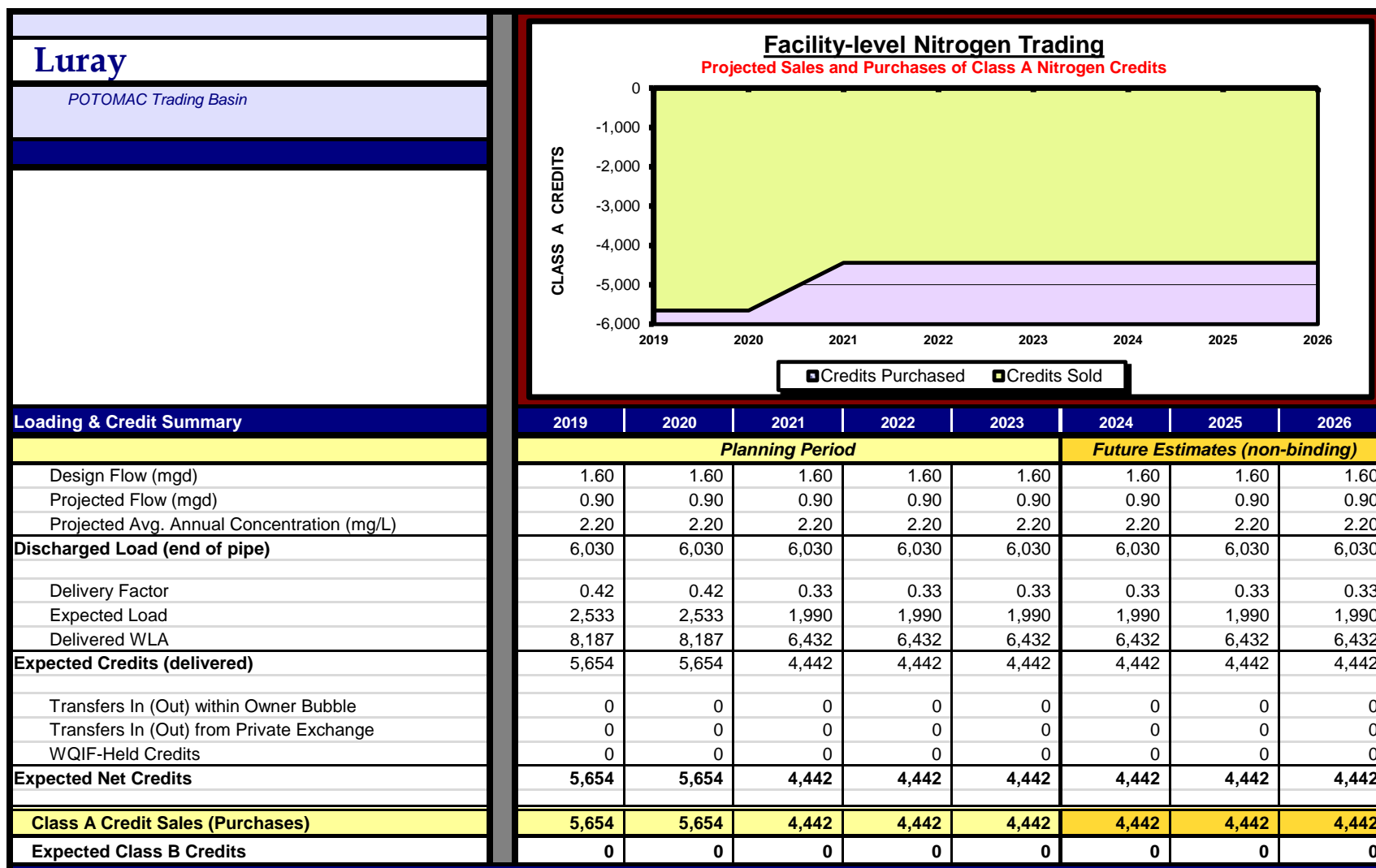
## NITROGEN FACILITY SUMMARY



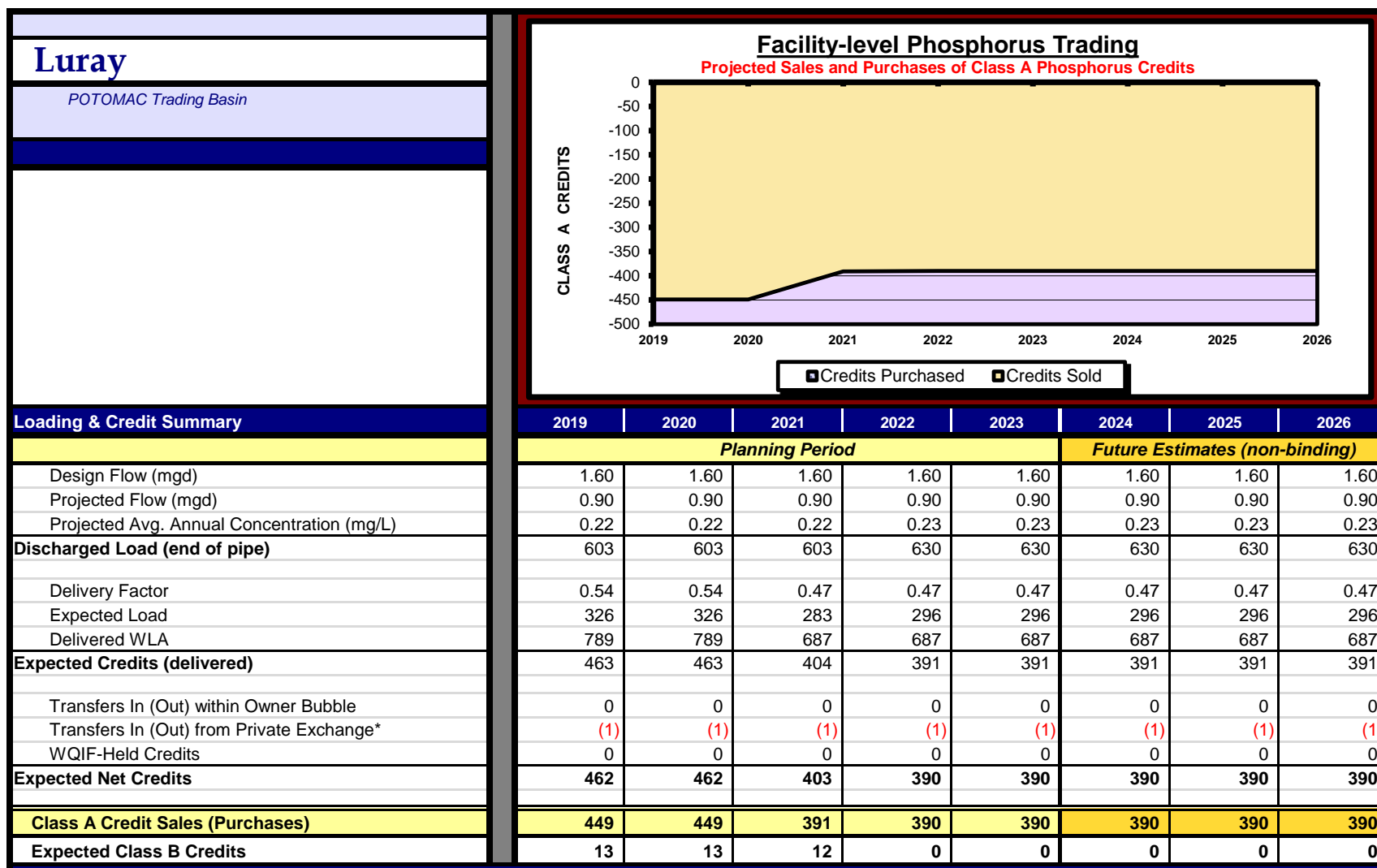
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



\* Credit reduction to satisfy stormwater requirements associated with Town's construction activities at Lake Arrowhead Complex

## NITROGEN FACILITY SUMMARY

Massanutten PSC

POTOMAC Trading Basin

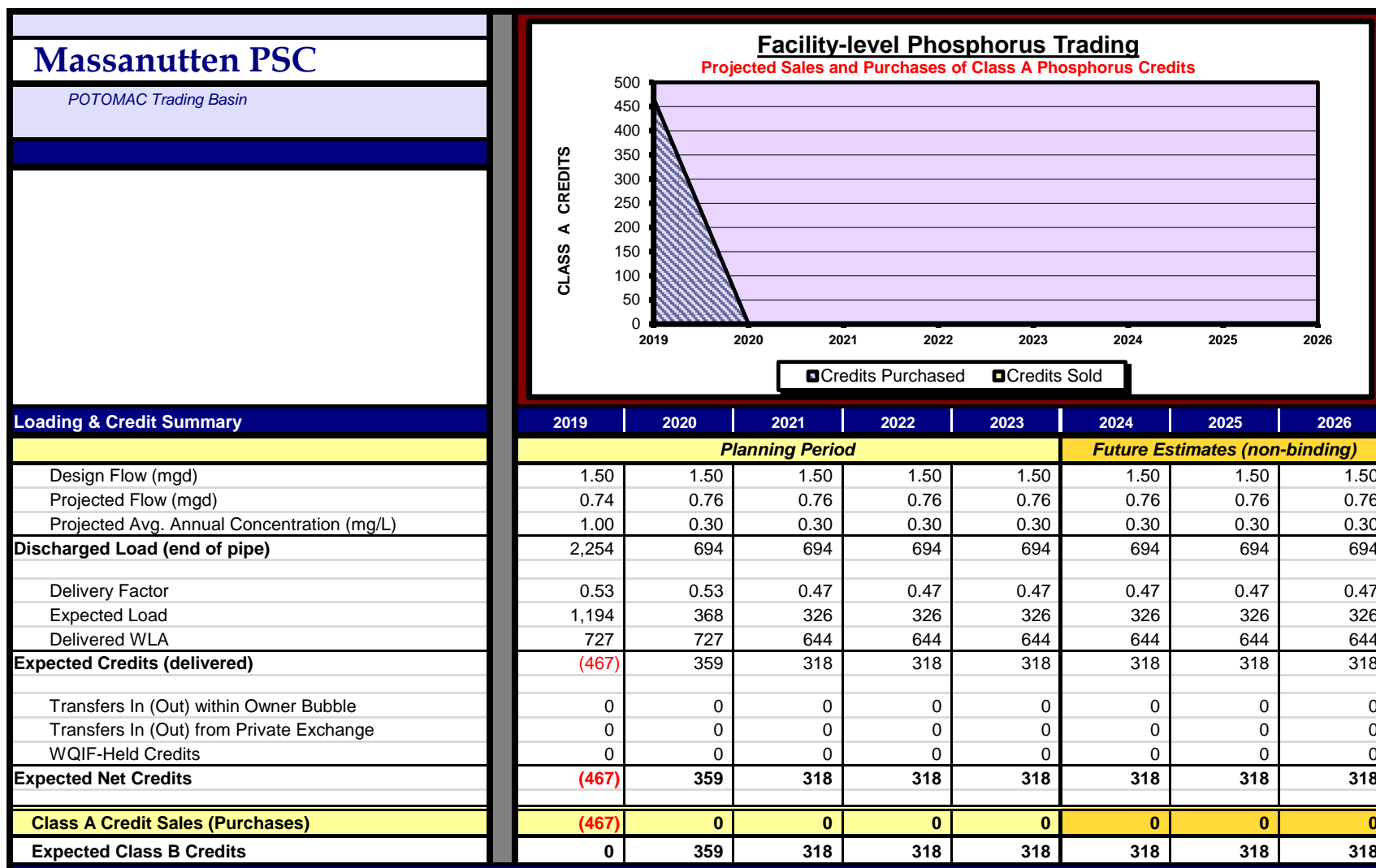
Facility-level Nitrogen Trading

Projected Sales and Purchases of Class A Nitrogen Credits

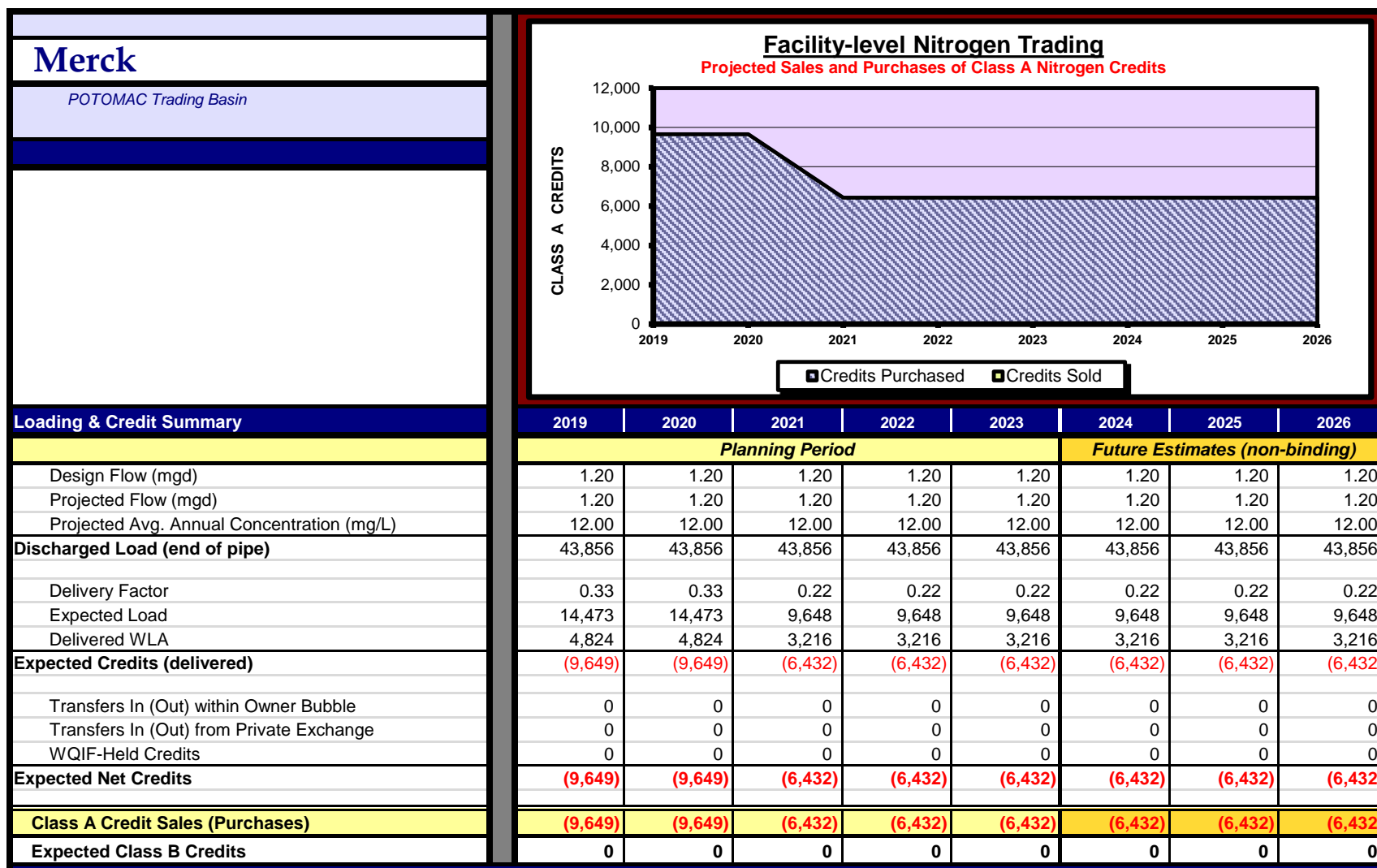
CLASS A CREDITS

<

## PHOSPHORUS FACILITY SUMMARY

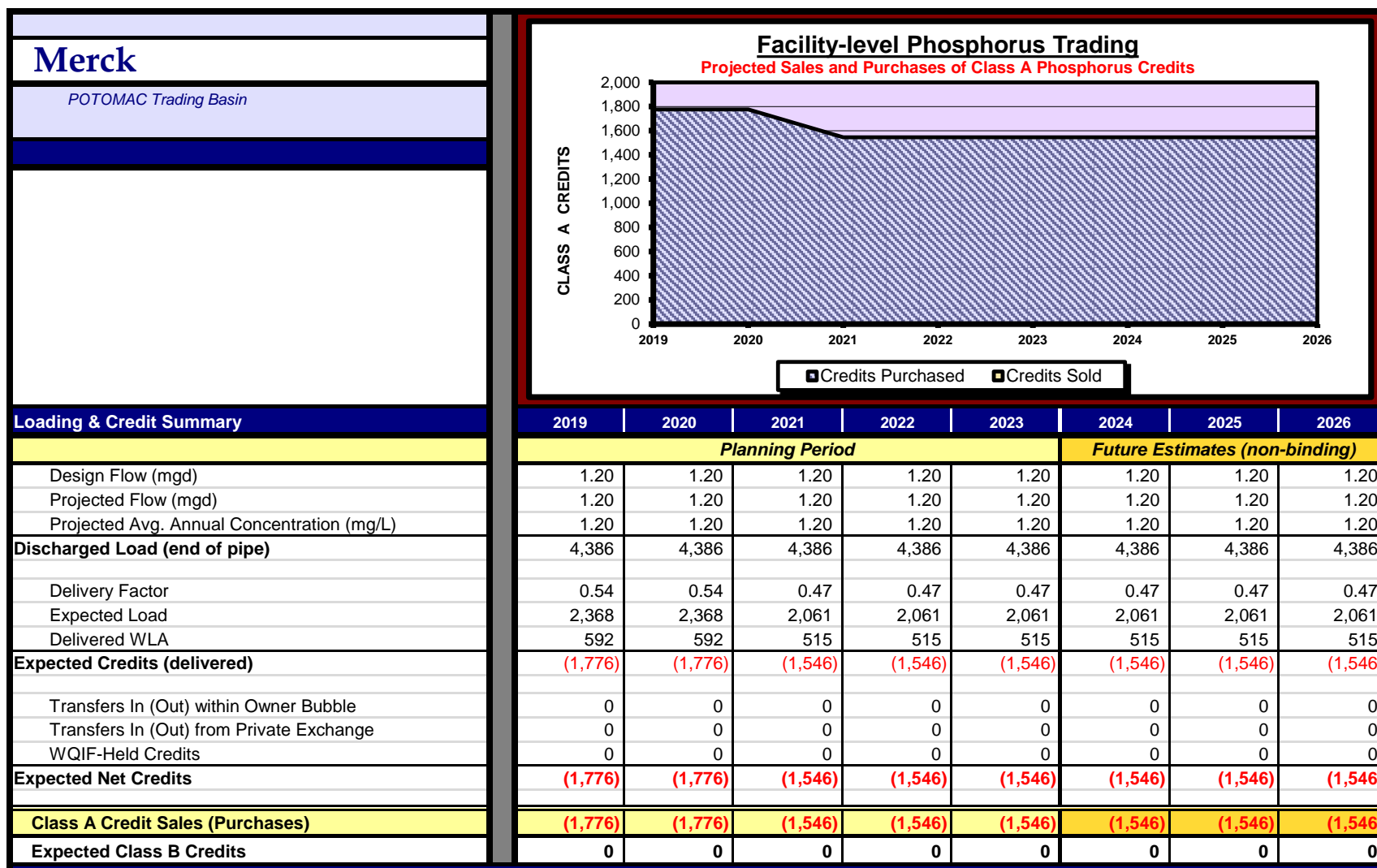


## NITROGEN FACILITY SUMMARY





## PHOSPHORUS FACILITY SUMMARY



## **Merck – Additional Information**

### **Description of Merck-Stonewall WQMP Regulation Note (10) as it Applies to the Exchange Compliance Plan:**

Under the Water Quality Management Planning Regulation (9VAC 25-720-50.C) and Watershed General Permit Registration List for the Potomac/Shenandoah River Basin, the Merck-Stonewall facility's WLAs are as follows:

Discharged TN WLA: 43,835 lbs/yr

Discharged TP WLA: 4,384 lbs/yr

The Discharged WLAs stated above are subject to the following conditions in the Water Quality Management Planning Regulation (9VAC 25-720-50.C):

(10) Merck-Stonewall – (a) these waste load allocations will be subject to further consideration, consistent with the Chesapeake Bay TMDL, as it may be amended, and possible reduction upon "full-scale" results showing the optimal treatment capability of the 4-stage Bardenpho technology at this facility consistent with the level of effort by other dischargers in the region. The "full scale" evaluation will be completed by December 31, 2011, and the results submitted to DEQ for review and subsequent board action; (b) in any year when credits are available after all other exchanges within the Shenandoah-Potomac River Basin are completed in accordance with § 62.1-44.19:18 of the Code of Virginia, Merck shall acquire credits for total nitrogen discharged in excess of 14,619 lbs/yr and total phosphorus discharged in excess of 1,096 lbs/yr; and (c) the allocations are not transferable and compliance credits are only generated if discharged loads are less than the loads identified in clause (b).

Note that the WLAs stated in Note (10) are expressed as Discharged WLAs. Consistent with Note (10) clauses (b) and (c), the Watershed General Permit and manner in which the Exchange Trading Model is designed, this Exchange Compliance Plan is prepared and presented based on the following Delivered WLAs derived using the applicable Delivery Factors ("DF"):

Delivered TN WLA: 4,824 lbs/yr (0.33 DF for Compliance Years 2016 to 2020)

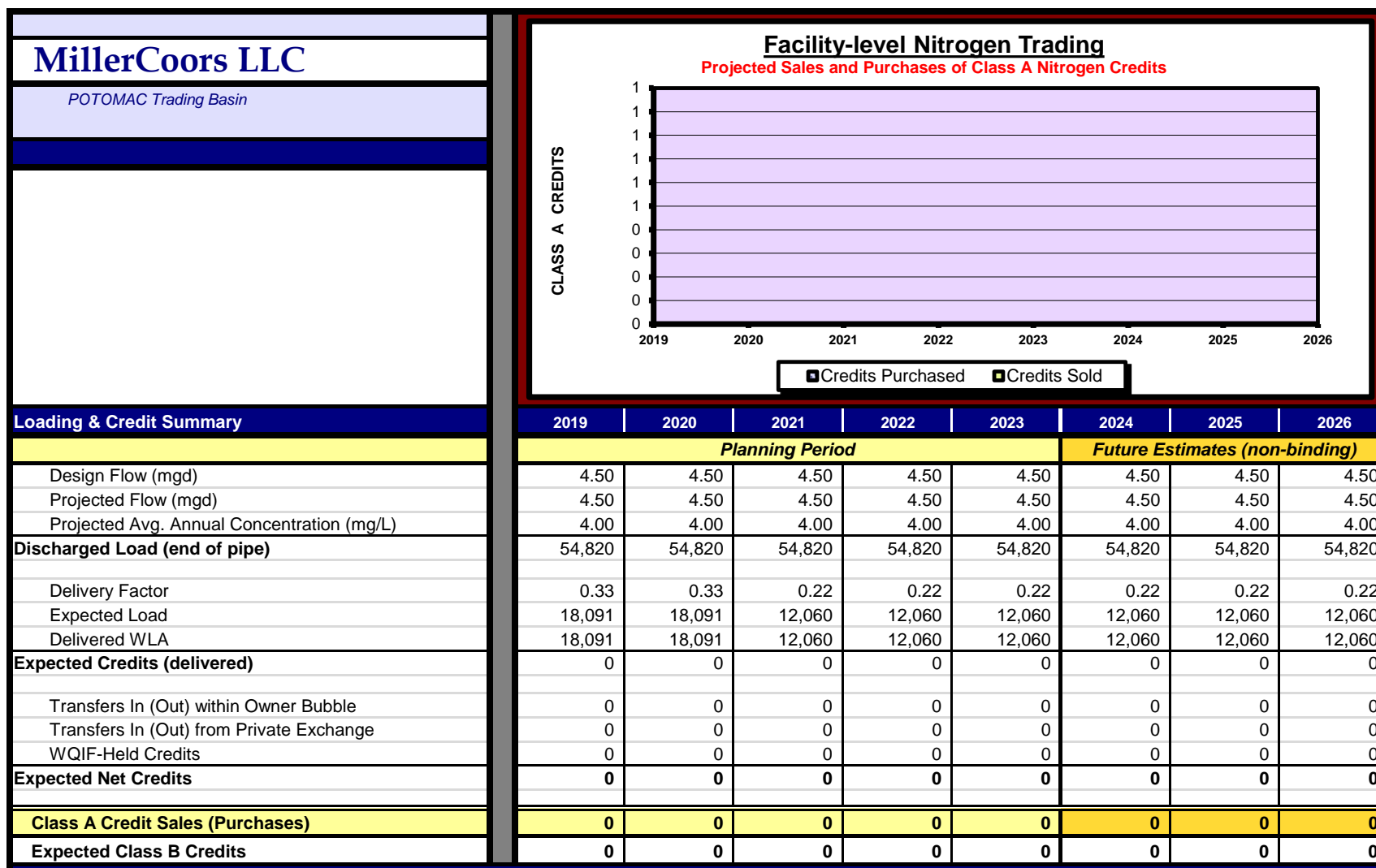
Delivered TN WLA: 3,216 lbs/yr (0.22 DF for Compliance Year 2021 and beyond)

Delivered TP WLA: 592 lbs/yr (0.54 DF for Compliance Years 2016 to 2020)

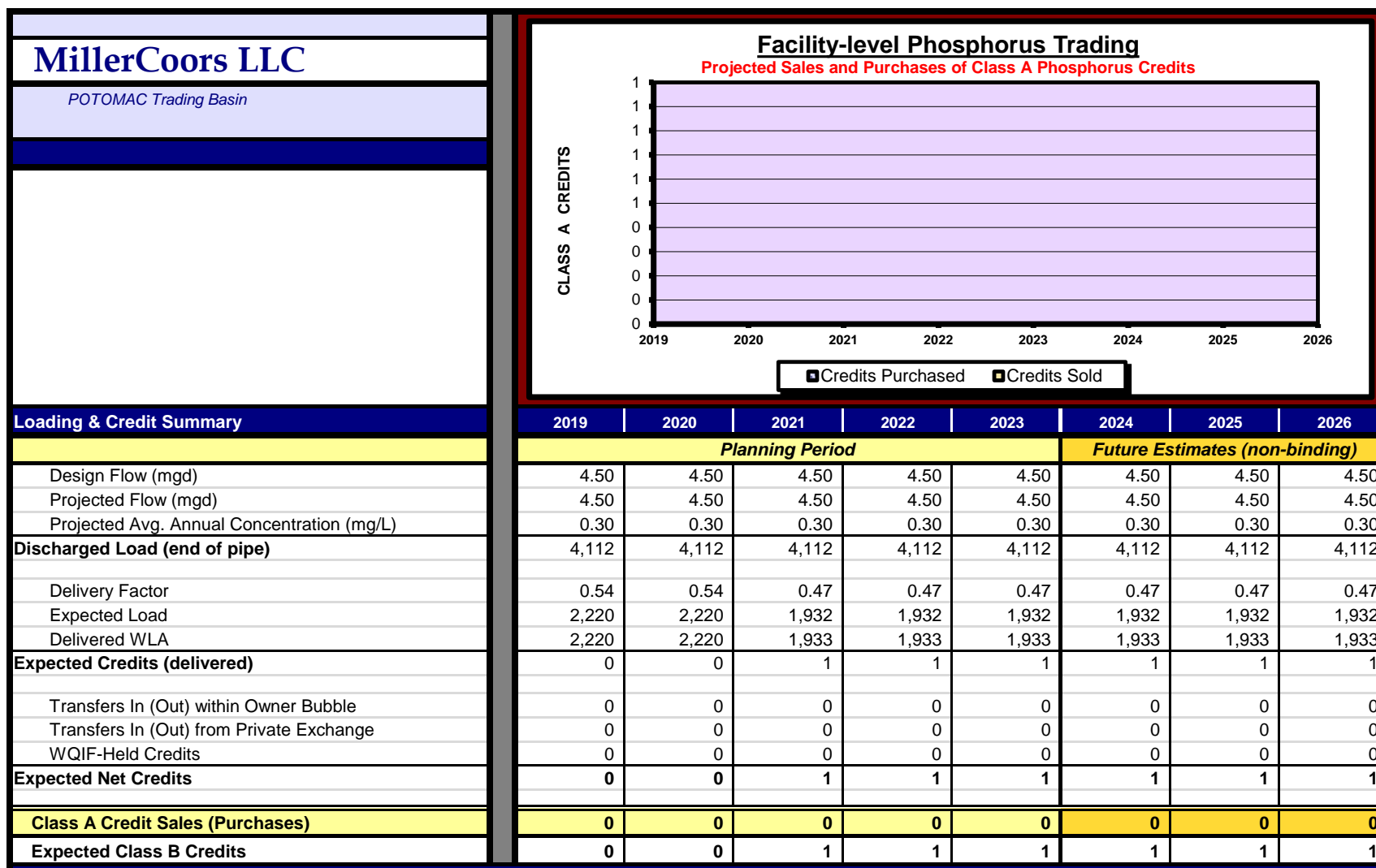
Delivered TP WLA: 515 lbs/yr (0.47 DF for Compliance Year 2021 and beyond)

This description neither creates nor implies any limitation on Merck's use of its full WLAs in the manner authorized under Note (10).

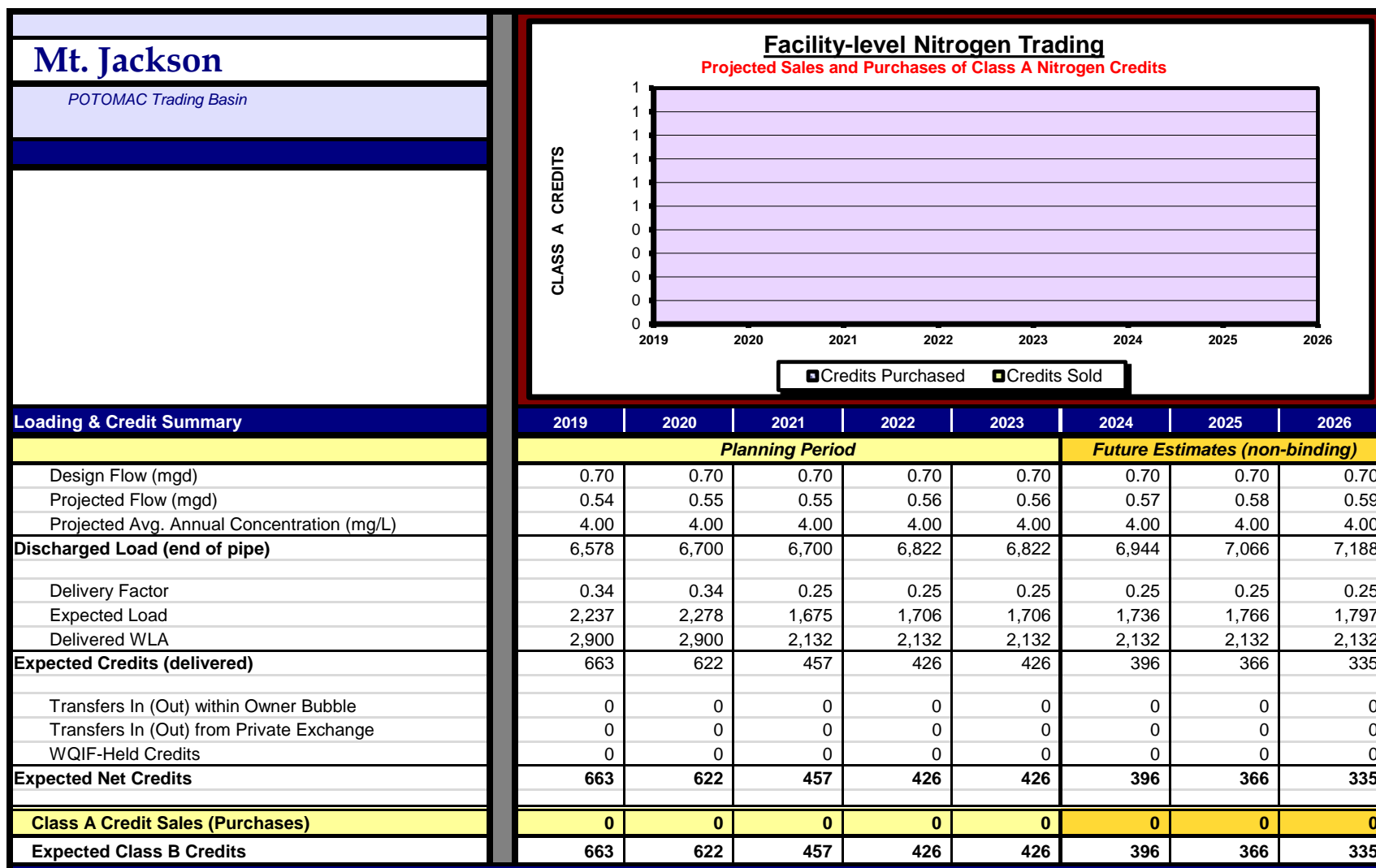
## NITROGEN FACILITY SUMMARY



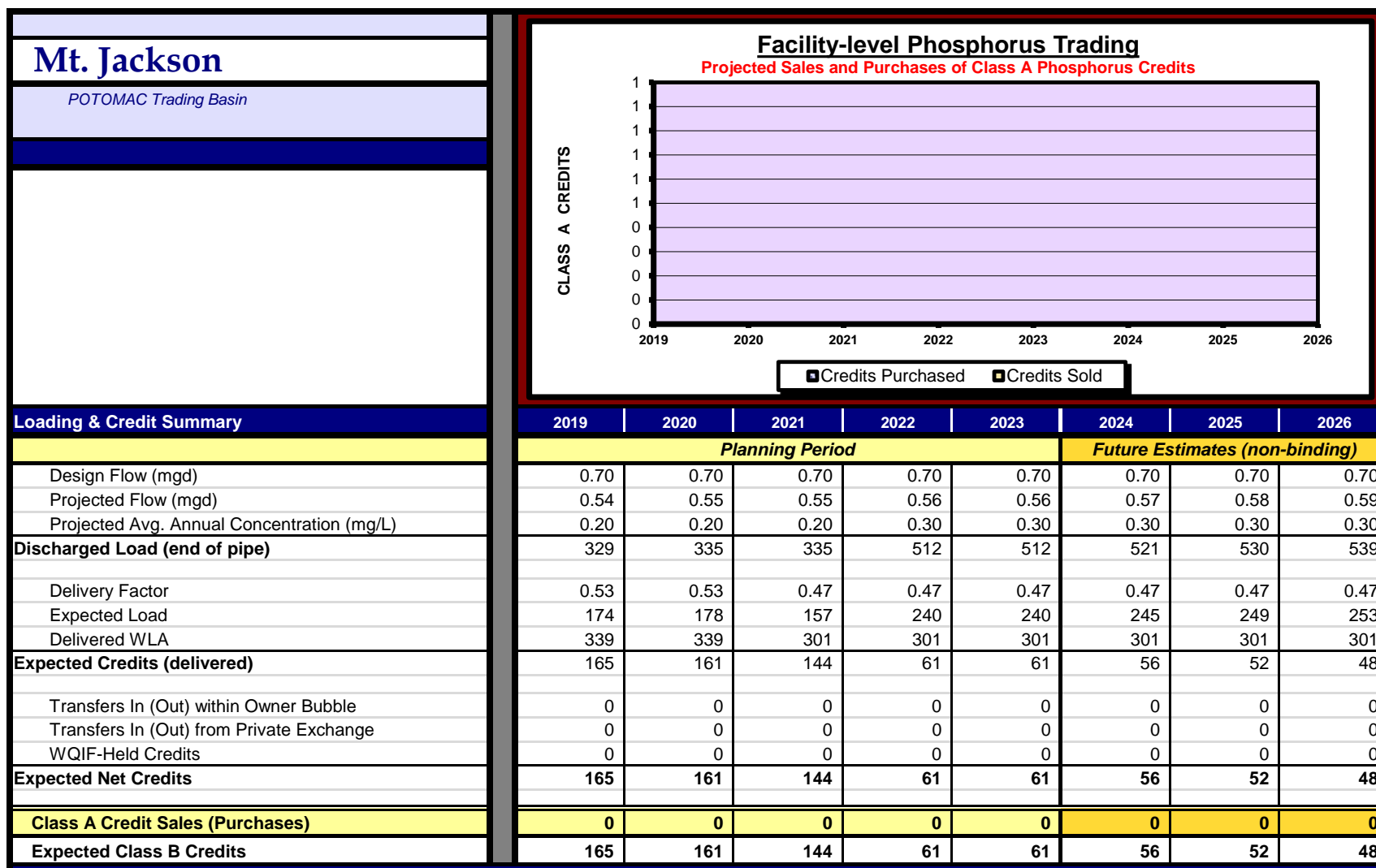
## PHOSPHORUS FACILITY SUMMARY



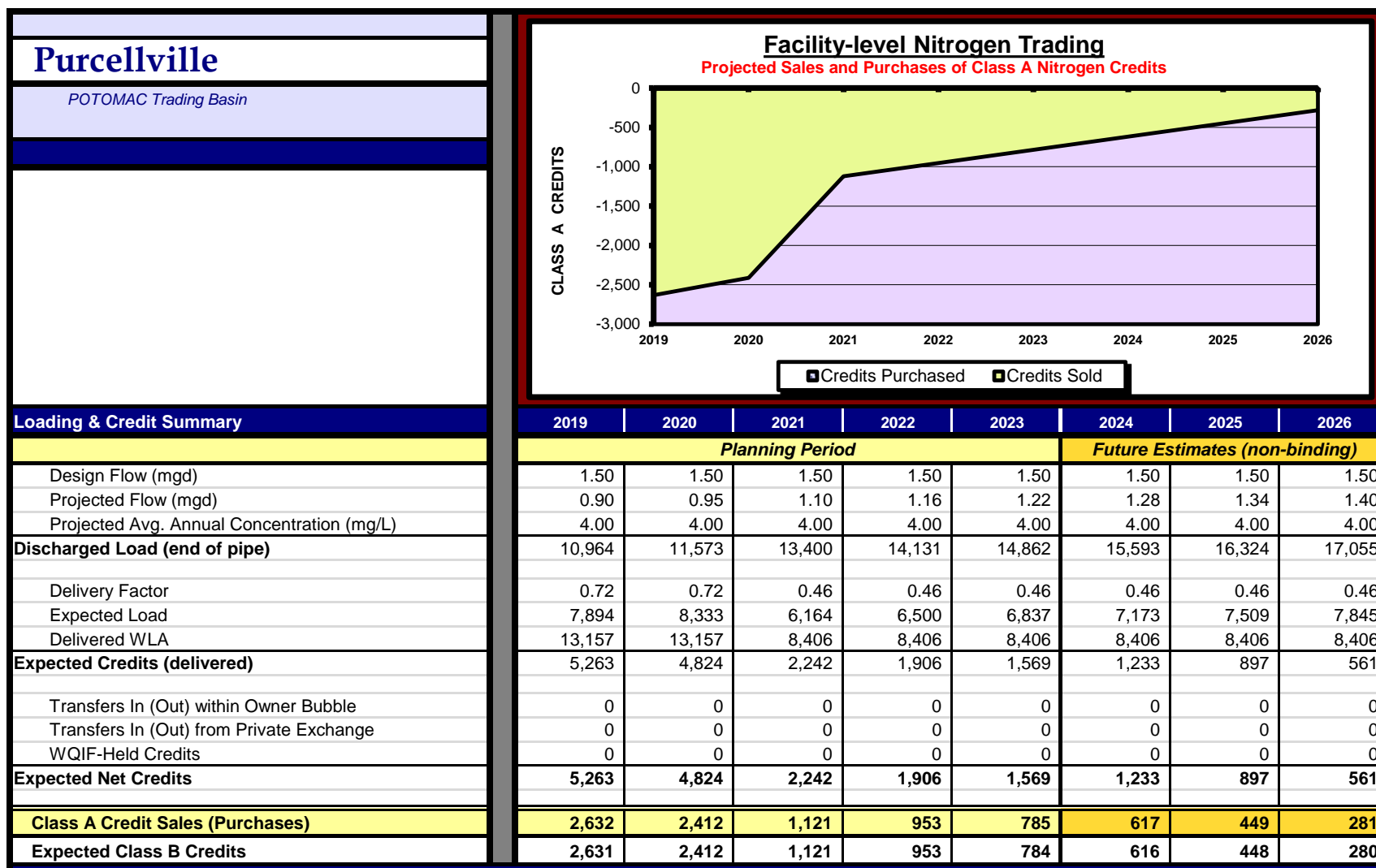
## NITROGEN FACILITY SUMMARY



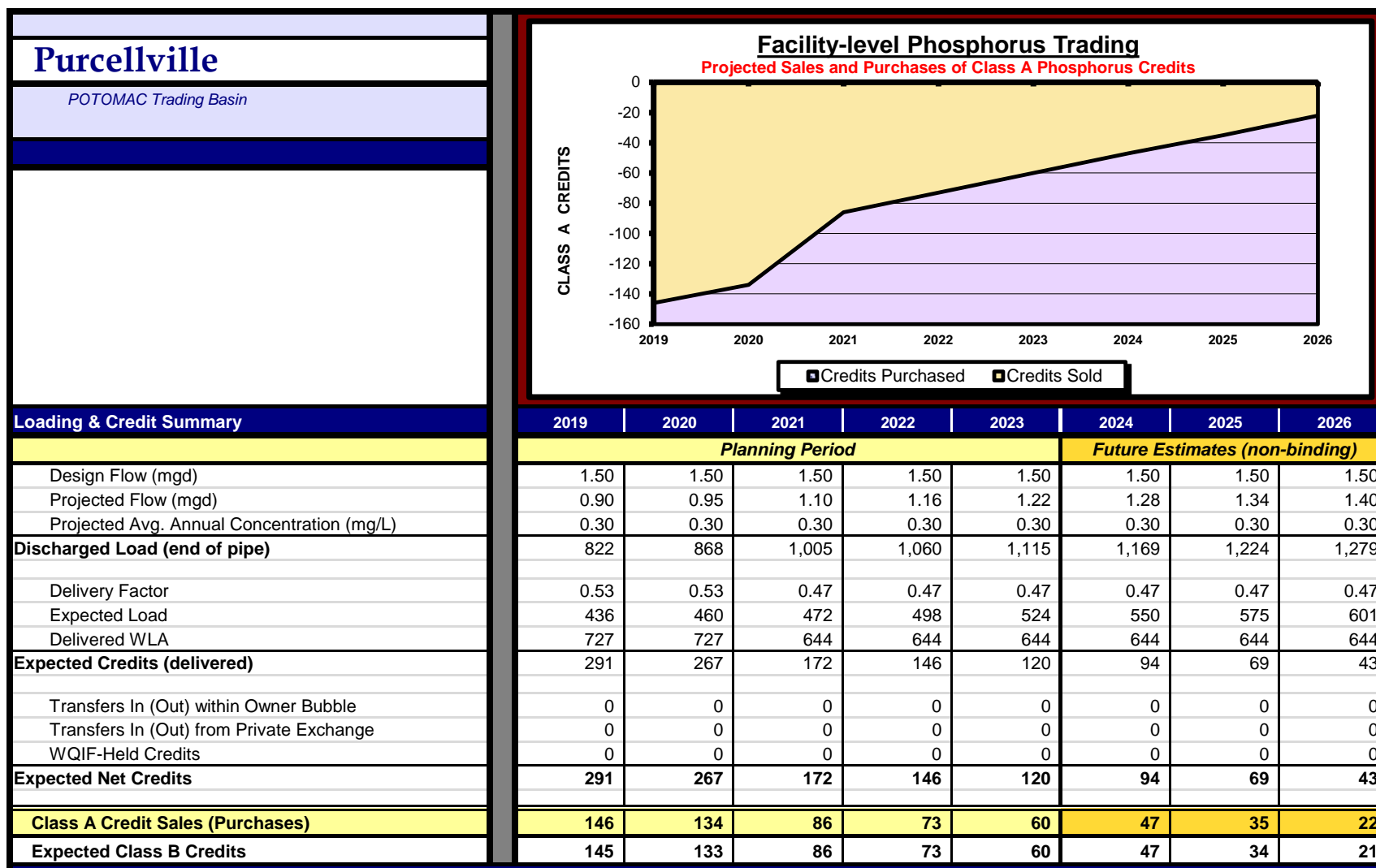
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

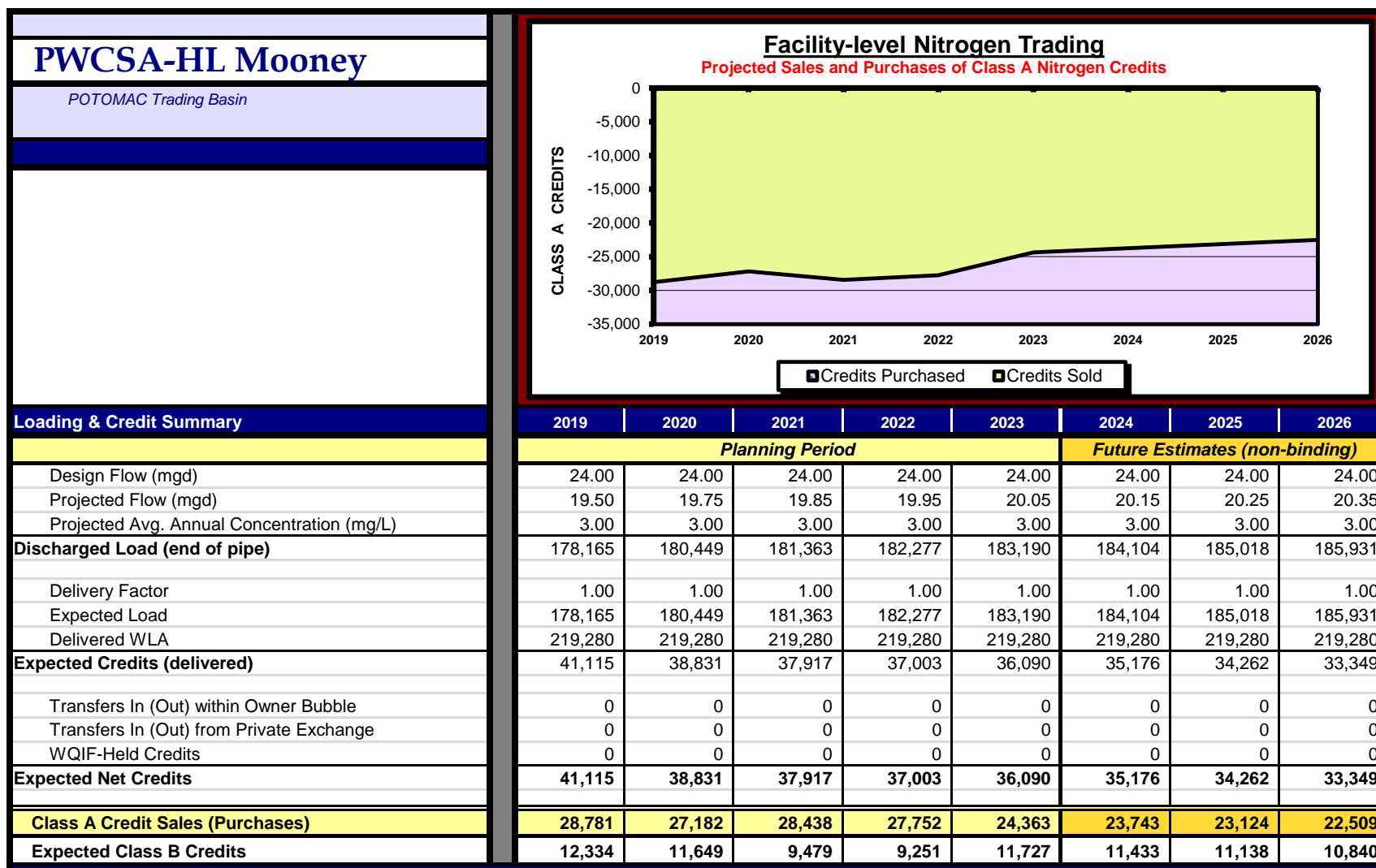


## PHOSPHORUS FACILITY SUMMARY

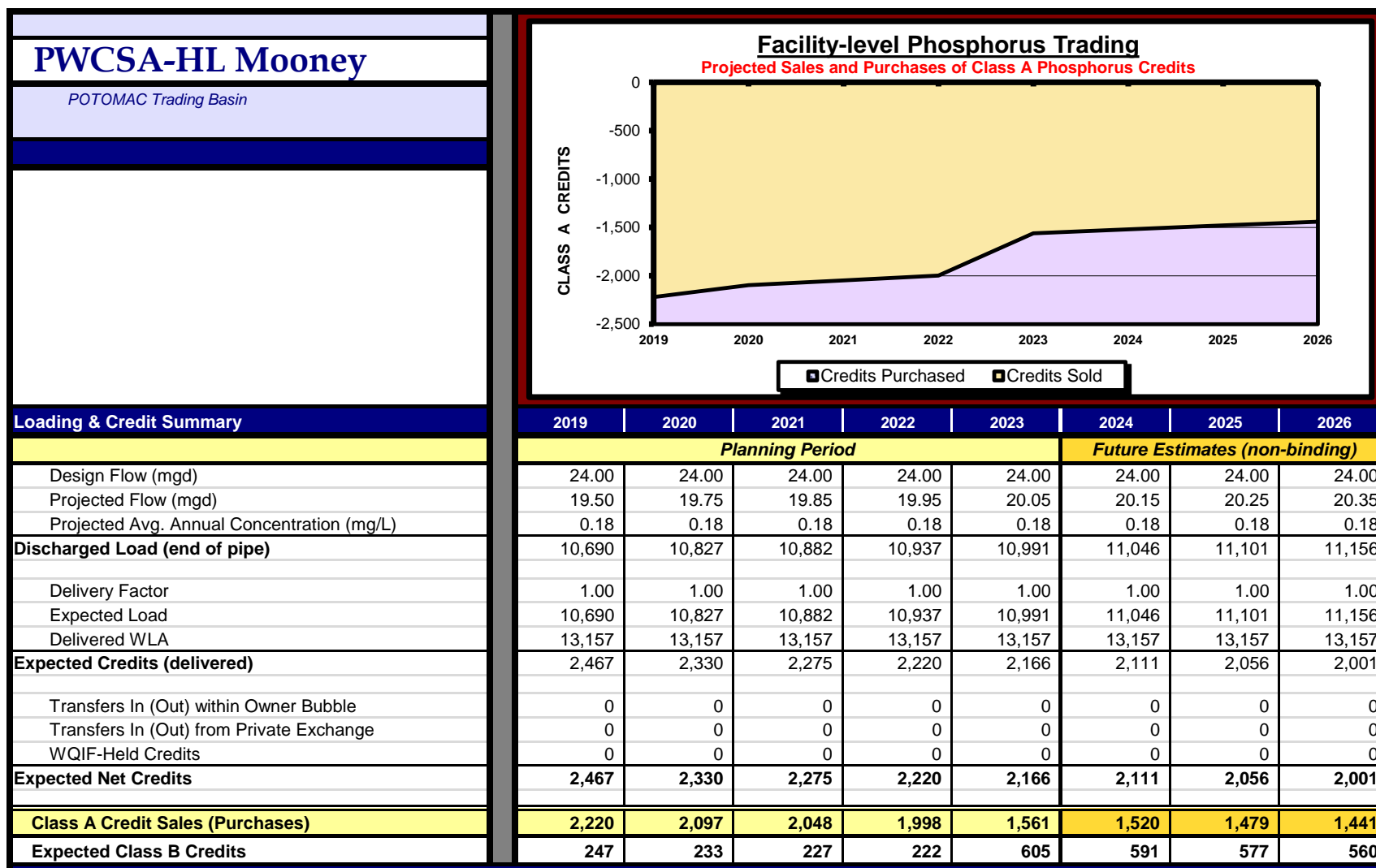




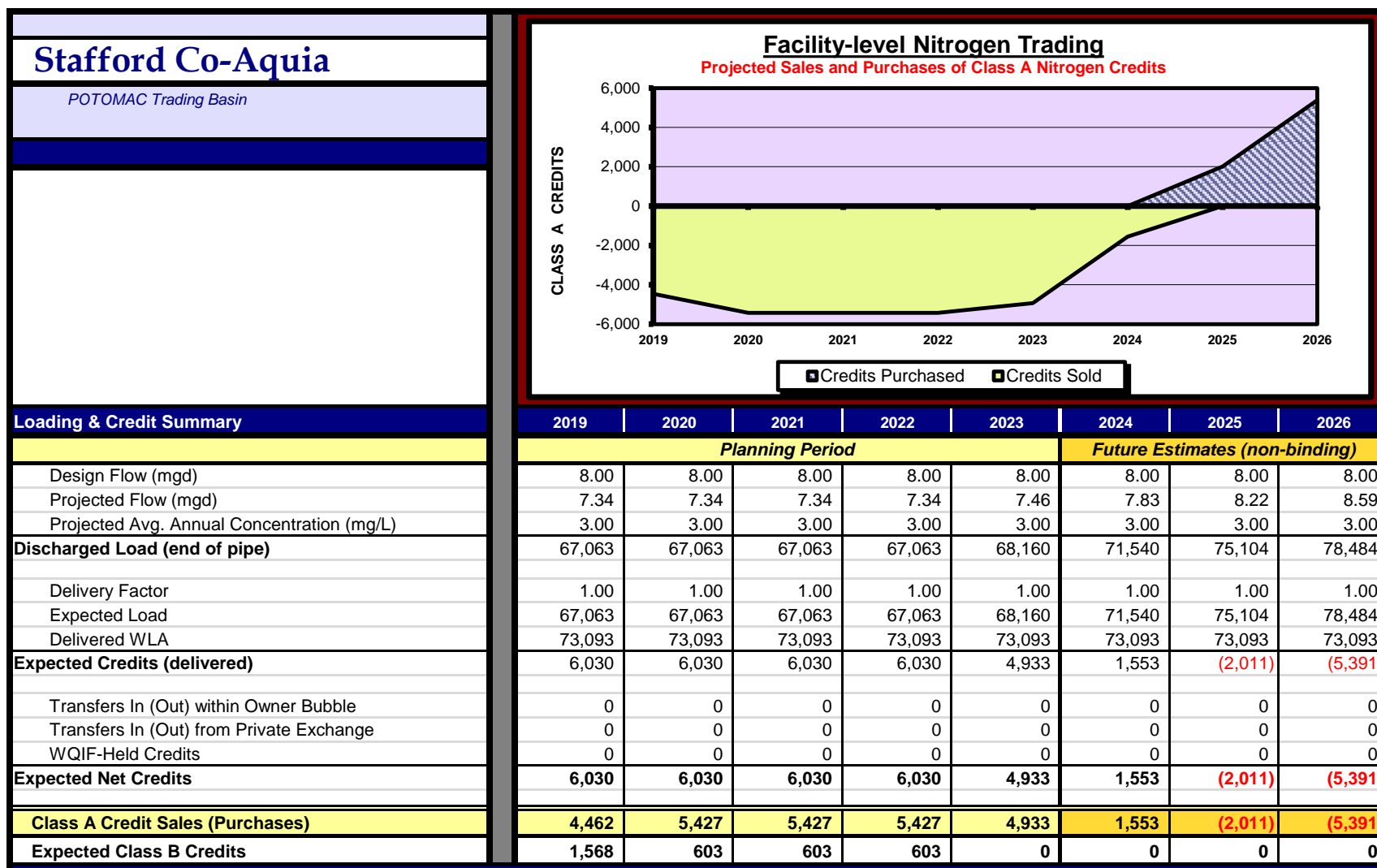
## NITROGEN FACILITY SUMMARY



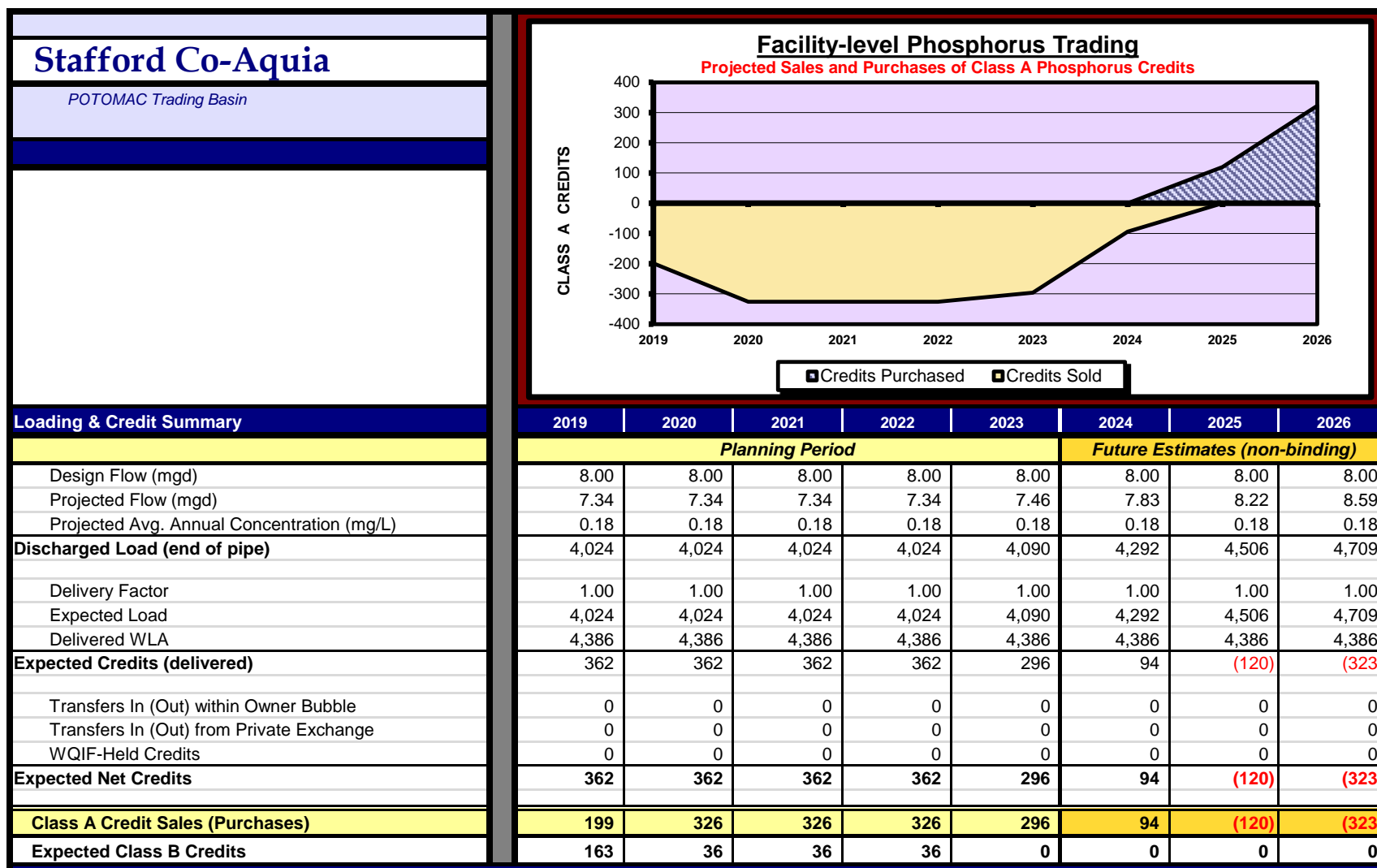
## PHOSPHORUS FACILITY SUMMARY



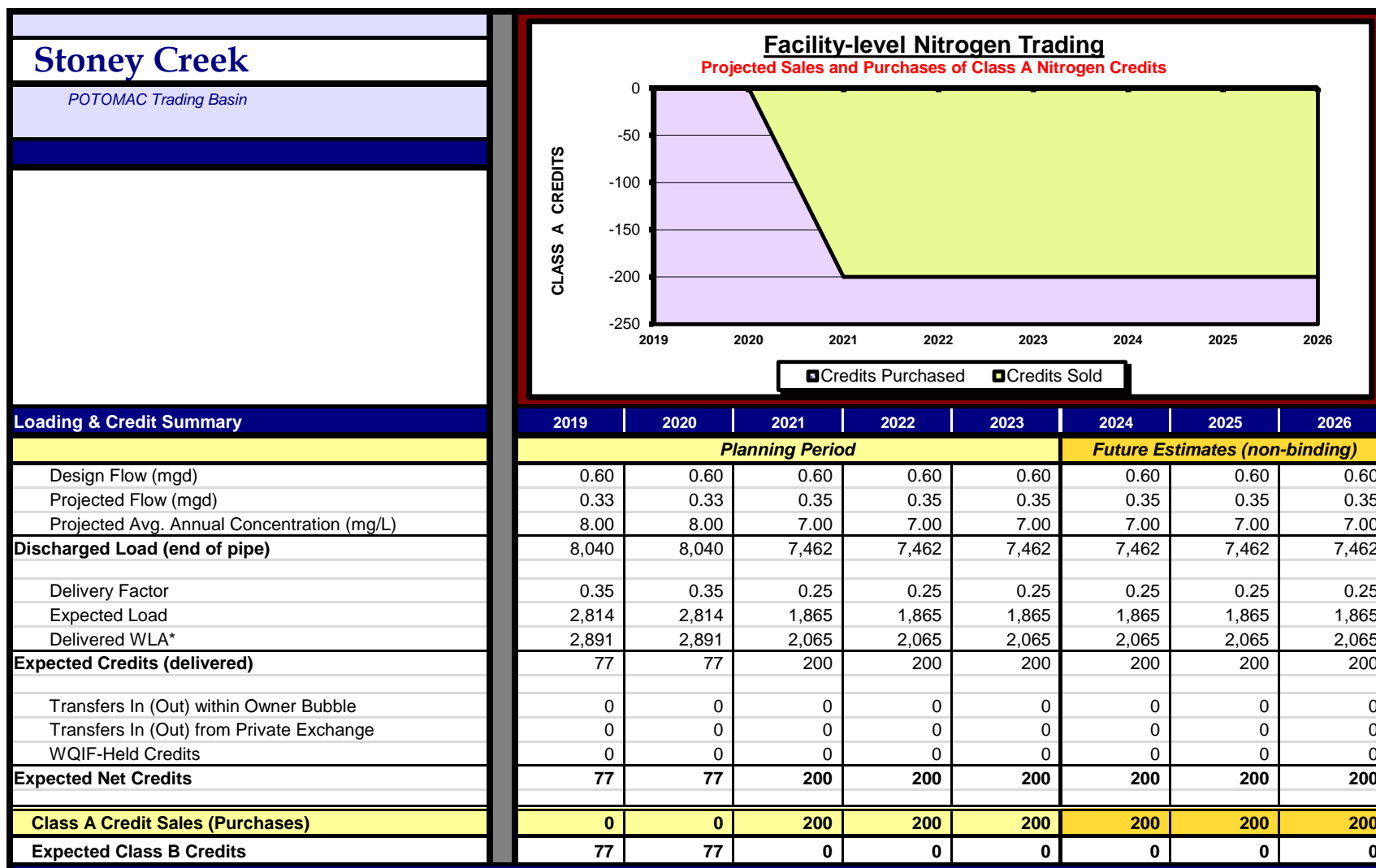
## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

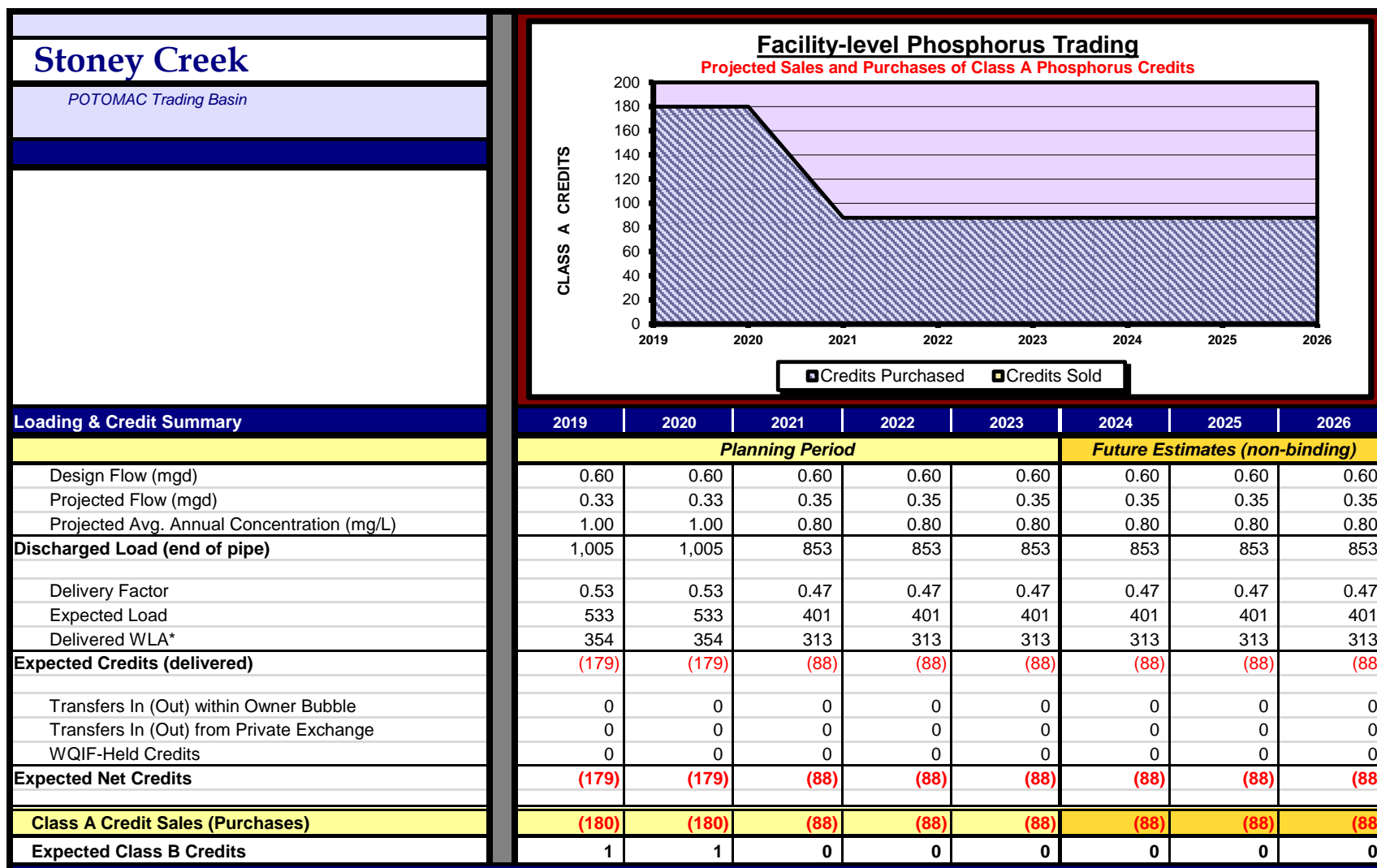


## NITROGEN FACILITY SUMMARY



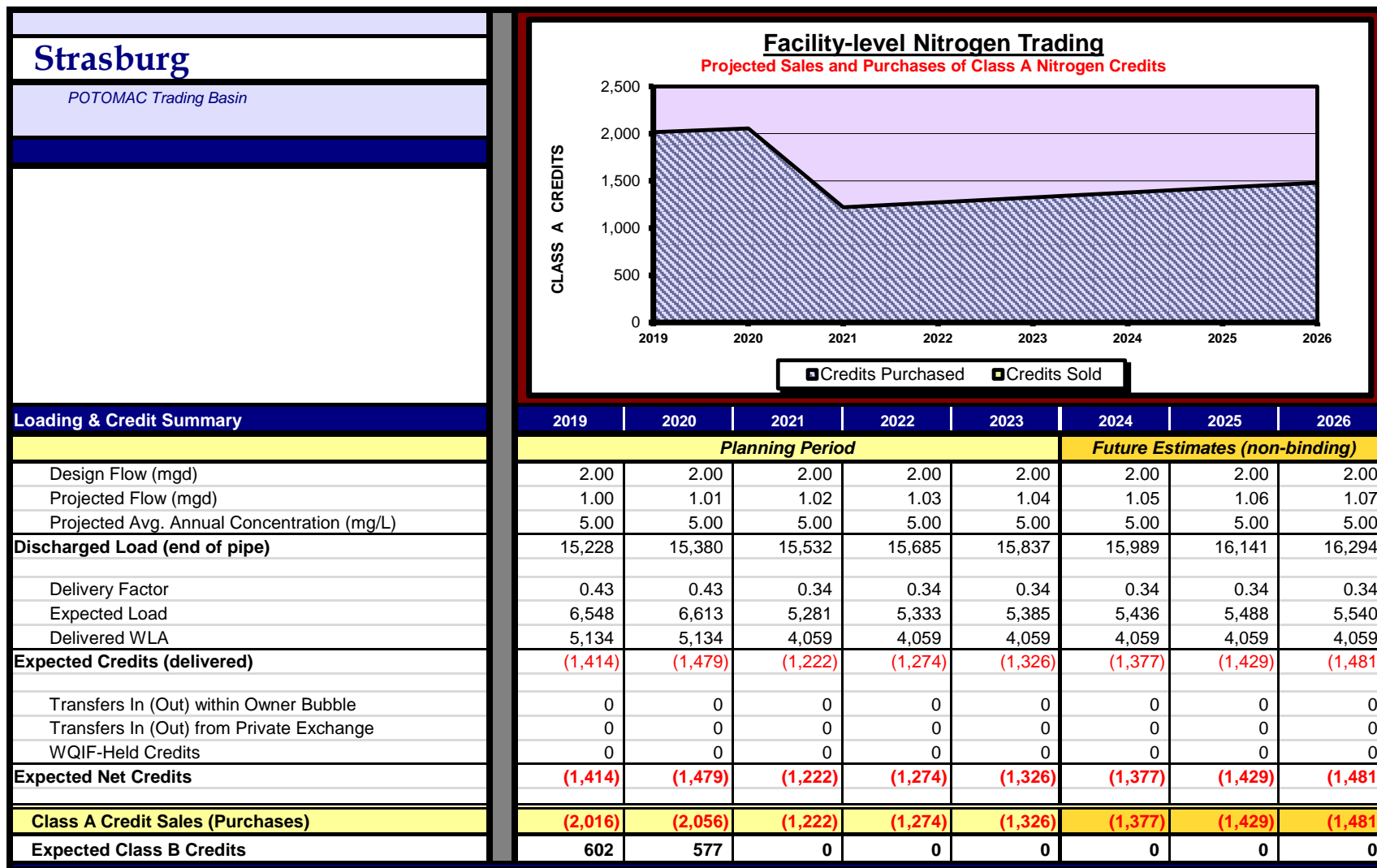
\* Reflects consolidation of the Shrine Mont STP wasteload allocation

## PHOSPHORUS FACILITY SUMMARY

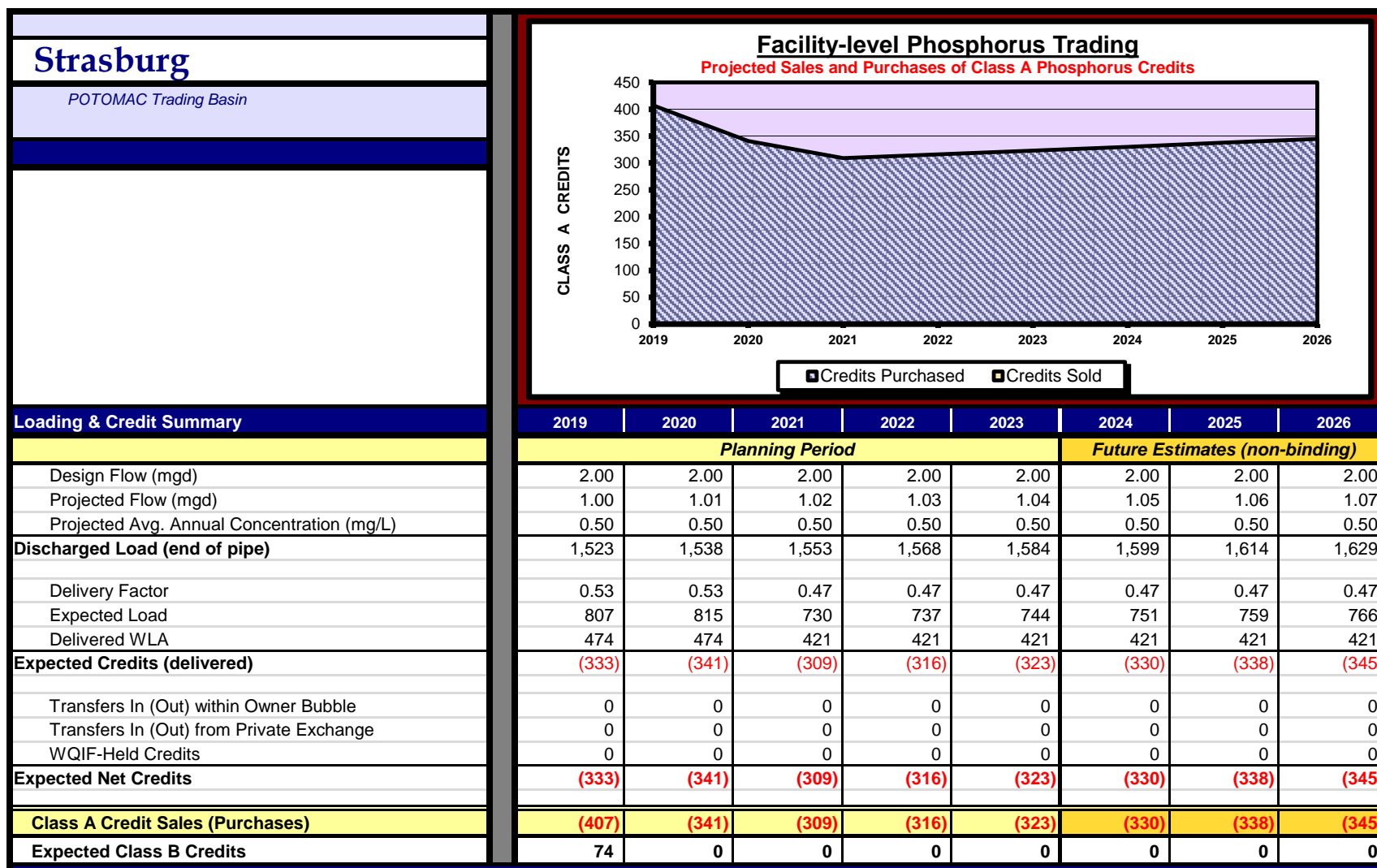


\* Reflects consolidation of the Shrine Mont STP wasteload allocation

## NITROGEN FACILITY SUMMARY

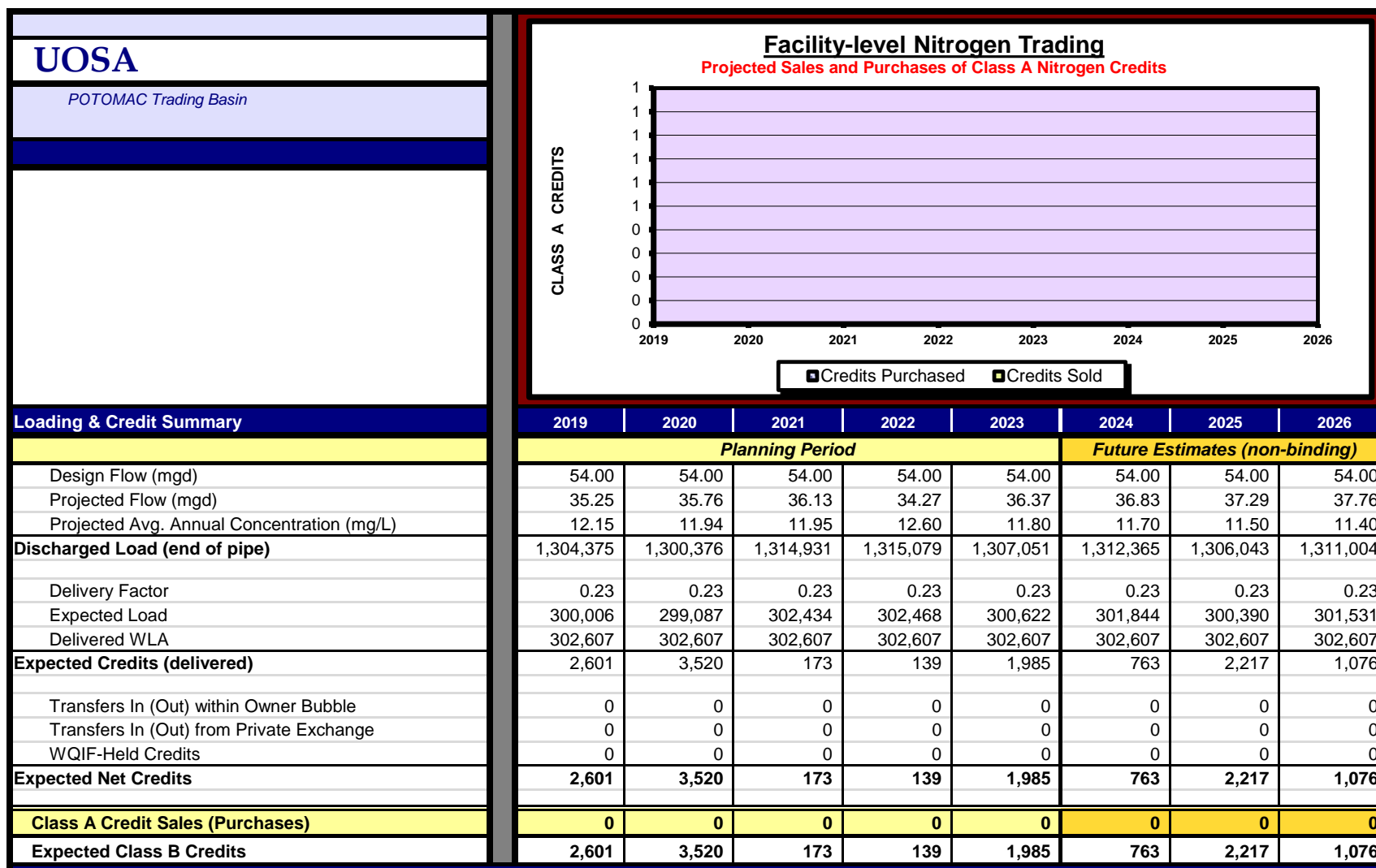


## PHOSPHORUS FACILITY SUMMARY

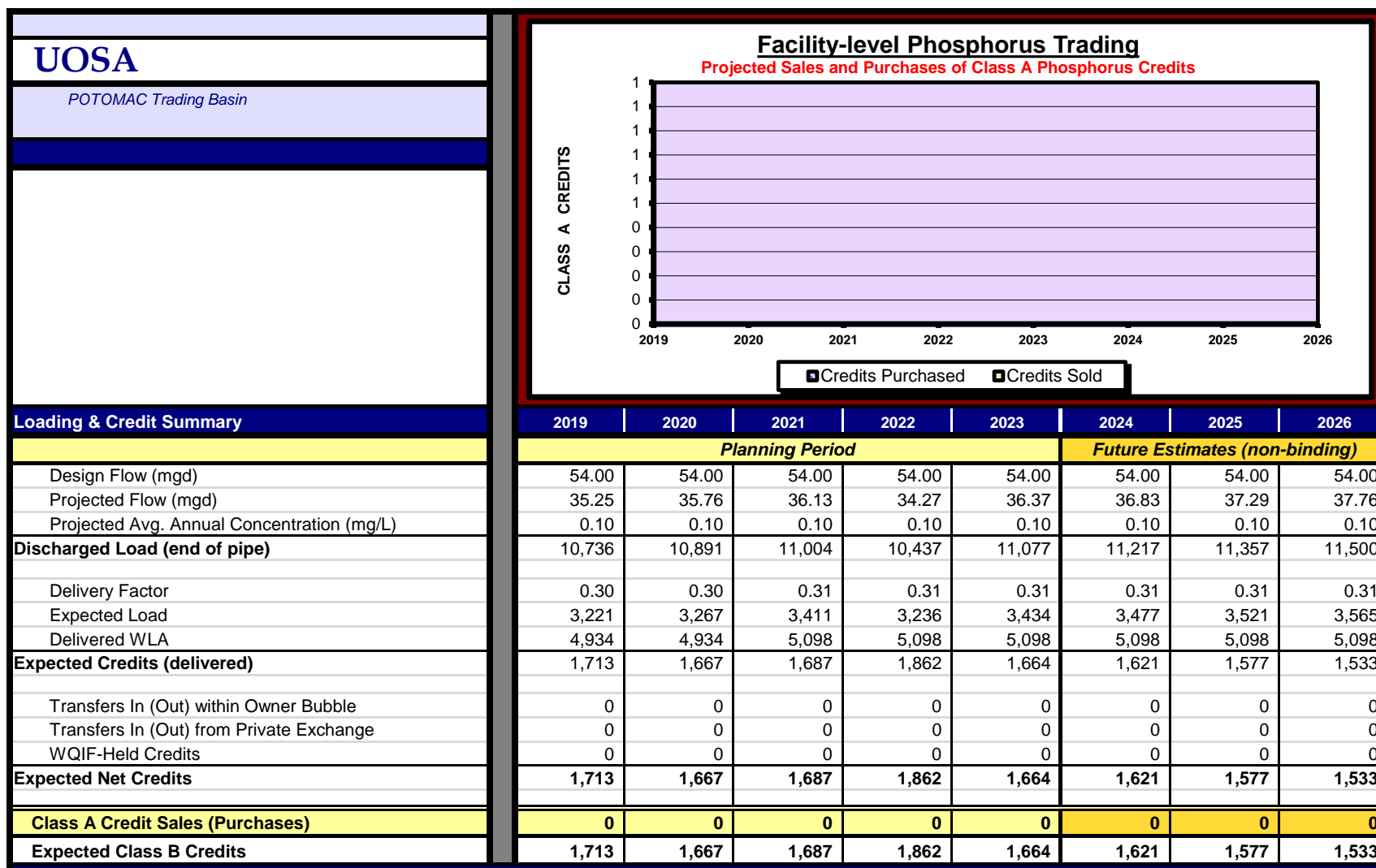




## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## Owner Bubble: Virginia American Water, Prince William District

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

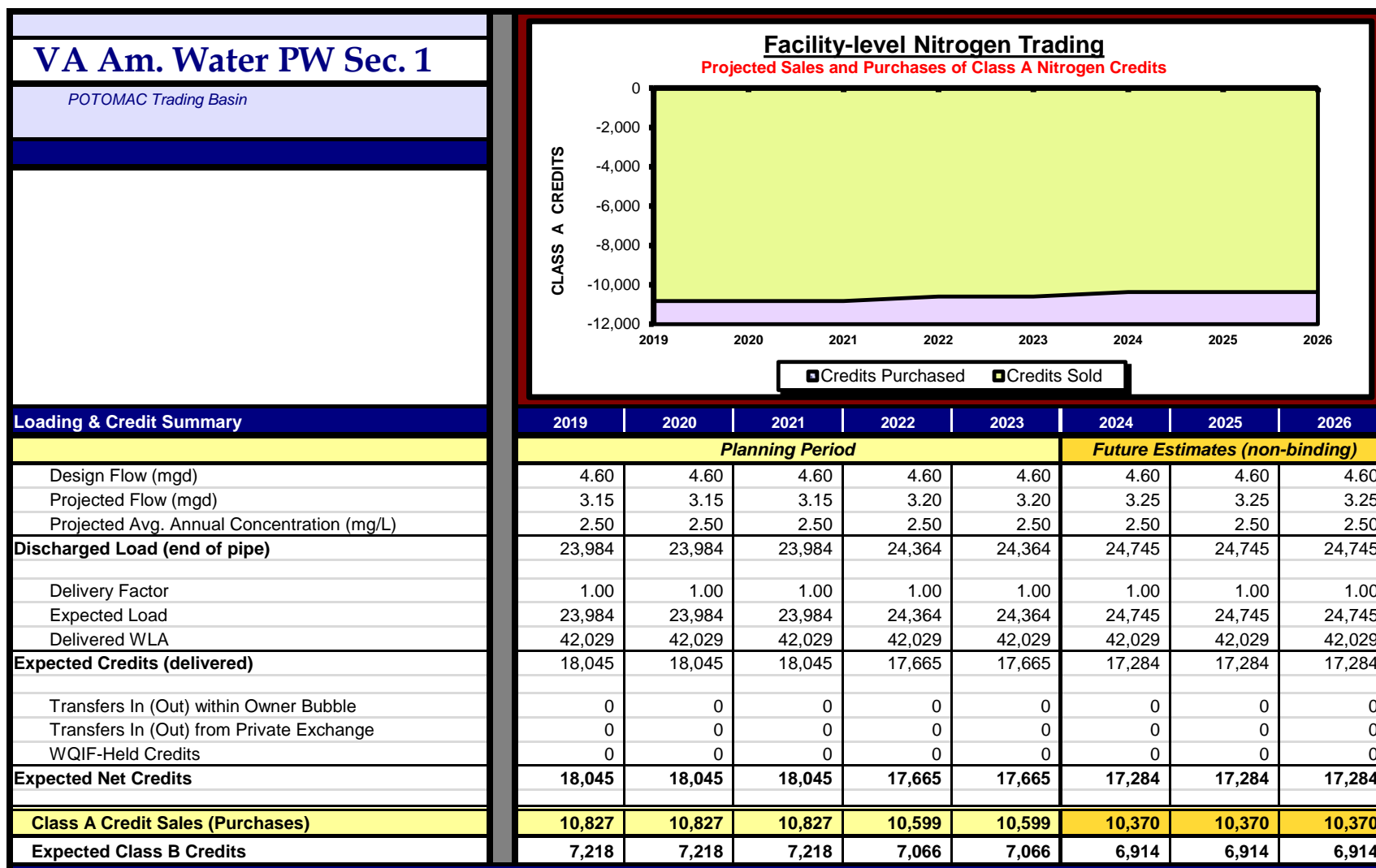
The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

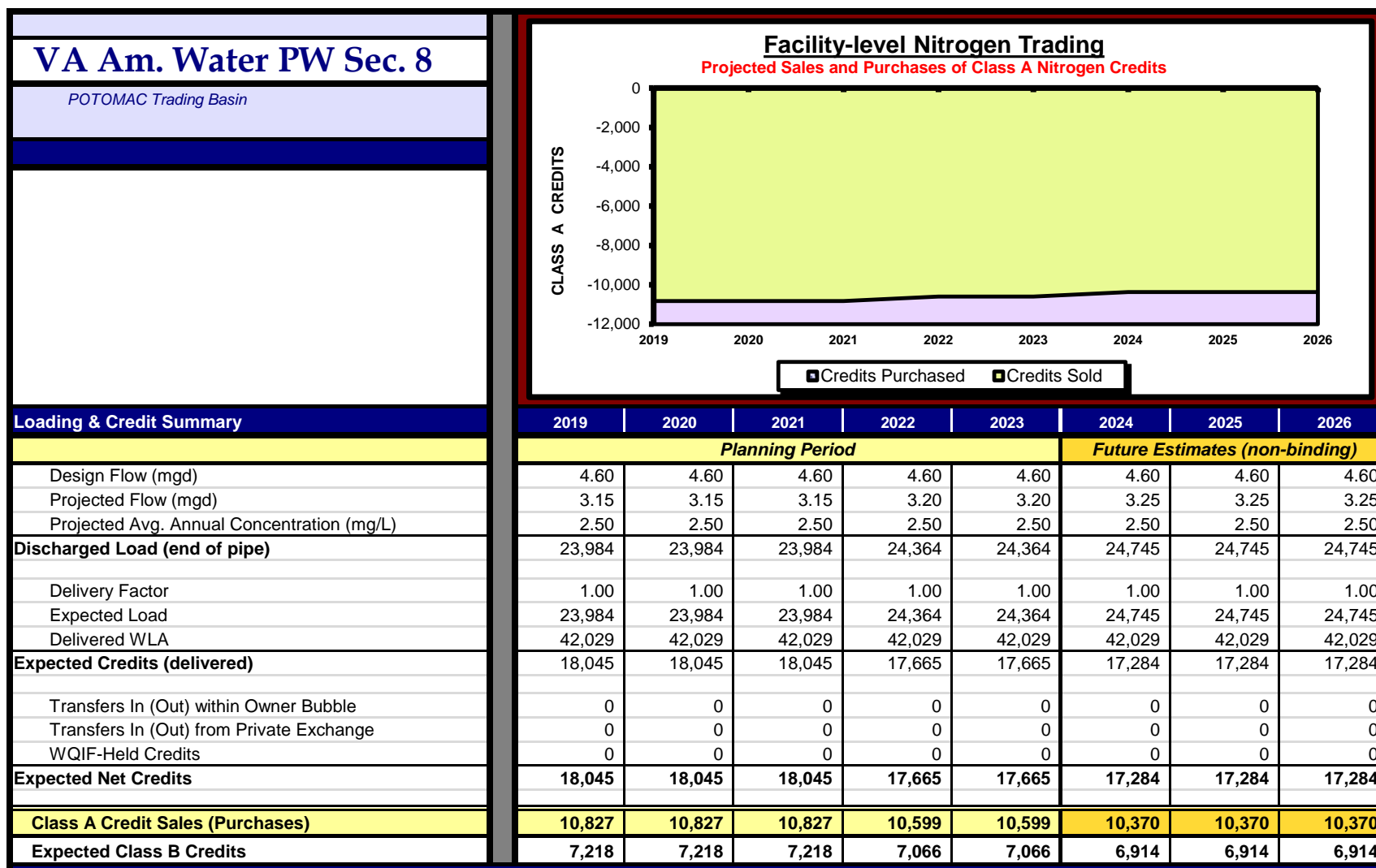
<b>NITROGEN Credits</b>		<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>		2019	2020	2021	2022	2023	2024	2025	2026
VA Am. Water PW Sec. 1		-	-	-	-	-	-	-	-
VA Am. Water PW Sec. 8		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>		-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>		2019	2020	2021	2022	2023	2024	2025	2026
VA Am. Water PW Sec. 1		18,045	18,045	18,045	17,665	17,665	17,284	17,284	17,284
VA Am. Water PW Sec. 8		18,045	18,045	18,045	17,665	17,665	17,284	17,284	17,284
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>		<b>36,090</b>	<b>36,090</b>	<b>36,090</b>	<b>35,330</b>	<b>35,330</b>	<b>34,568</b>	<b>34,568</b>	<b>34,568</b>
<b>Class A Sales (Purchases)</b>		<b>21,654</b>	<b>21,654</b>	<b>21,654</b>	<b>21,198</b>	<b>21,198</b>	<b>20,740</b>	<b>20,740</b>	<b>20,740</b>
<i>Expected Class B Credits</i>		14,436	14,436	14,436	14,132	14,132	13,828	13,828	13,828
<i>WQIF-Held Credits</i>		0	0	0	0	0	0	0	0

<b>PHOSPHORUS Credits</b>		<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>		2019	2020	2021	2022	2023	2024	2025	2026
VA Am. Water PW Sec. 1		-	-	-	-	-	-	-	-
VA Am. Water PW Sec. 8		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>		-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>		2019	2020	2021	2022	2023	2024	2025	2026
VA Am. Water PW Sec. 1		1,083	1,083	1,083	1,060	1,060	1,037	1,037	1,037
VA Am. Water PW Sec. 8		1,083	1,083	1,083	1,060	1,060	1,037	1,037	1,037
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>		<b>2,166</b>	<b>2,166</b>	<b>2,166</b>	<b>2,120</b>	<b>2,120</b>	<b>2,074</b>	<b>2,074</b>	<b>2,074</b>
<b>Class A Sales (Purchases)</b>		<b>1,300</b>	<b>1,300</b>	<b>1,300</b>	<b>1,272</b>	<b>1,272</b>	<b>1,272</b>	<b>1,272</b>	<b>1,272</b>
<i>Expected Class B Credits</i>		866	866	866	848	848	802	802	802
<i>WQIF-Held Credits</i>		0	0	0	0	0	0	0	0

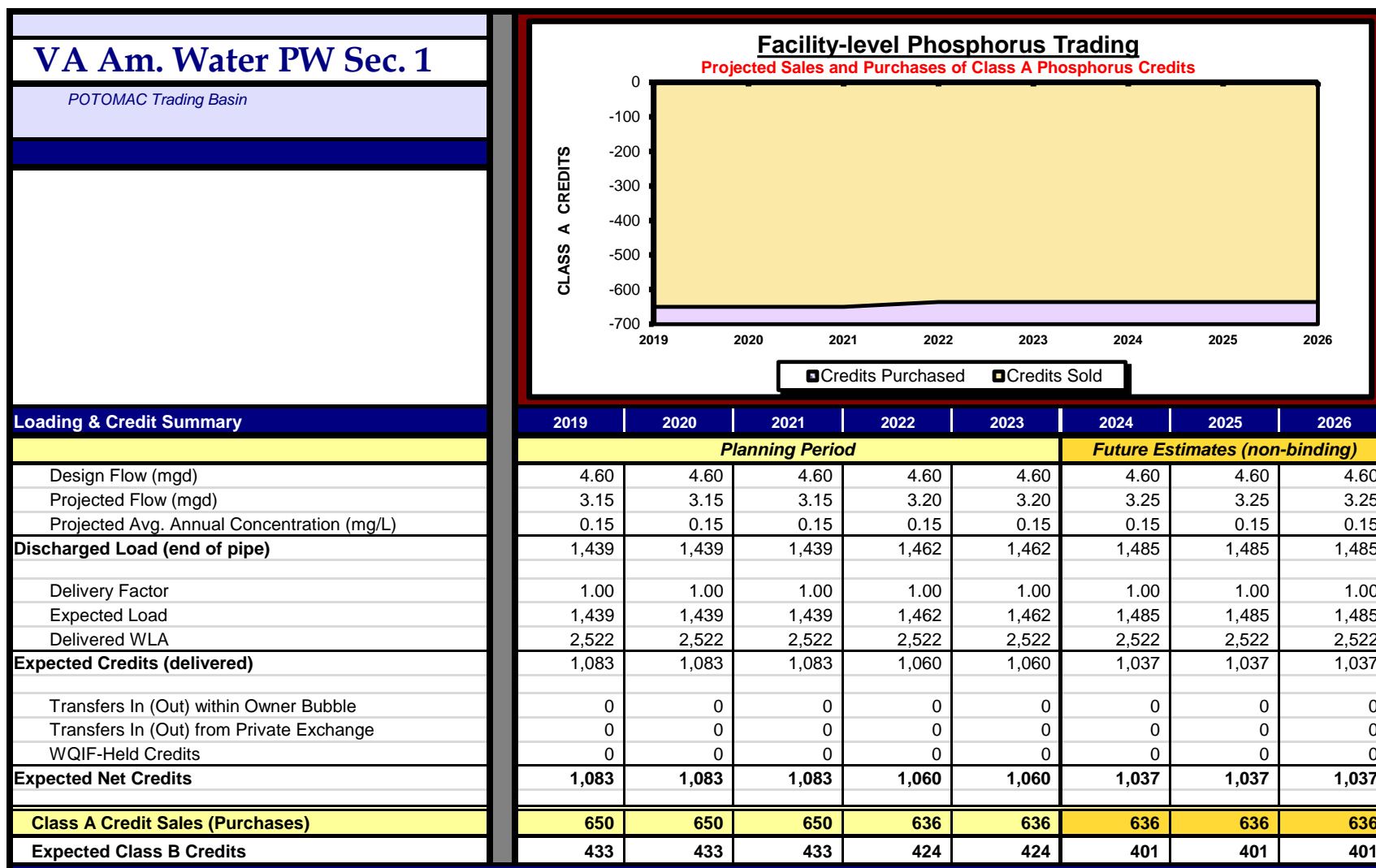
# NITROGEN FACILITY SUMMARY



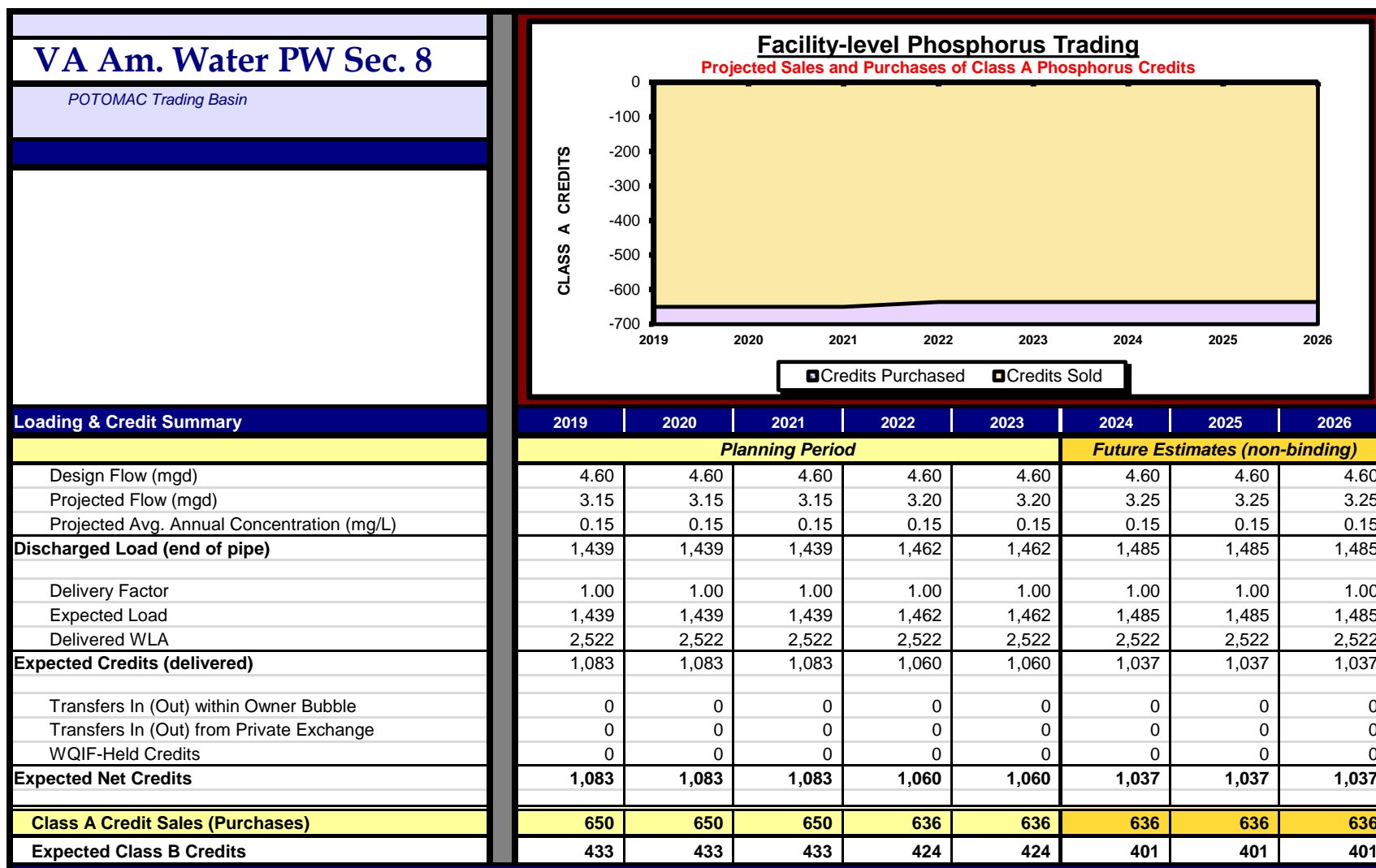
## NITROGEN FACILITY SUMMARY



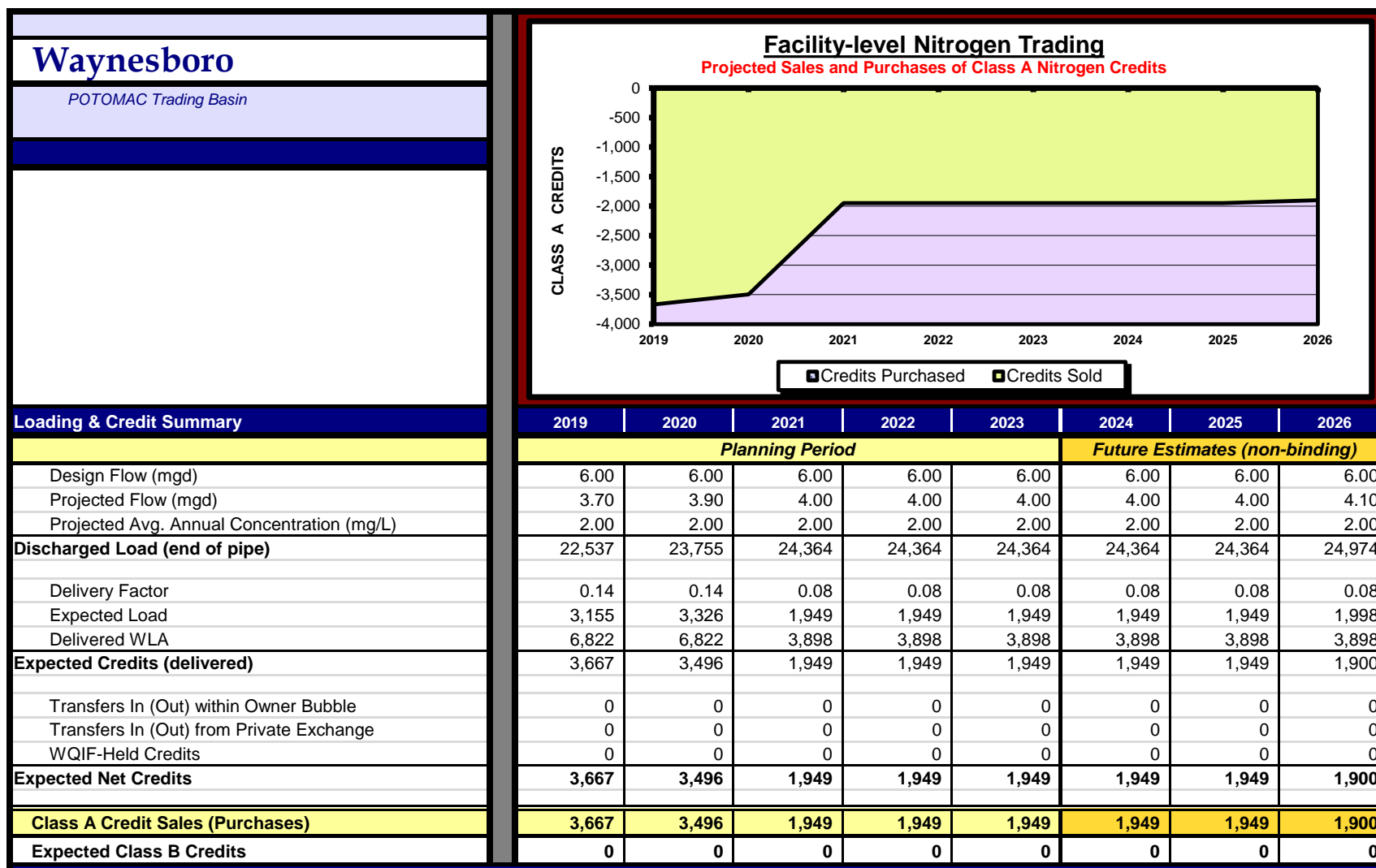
## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

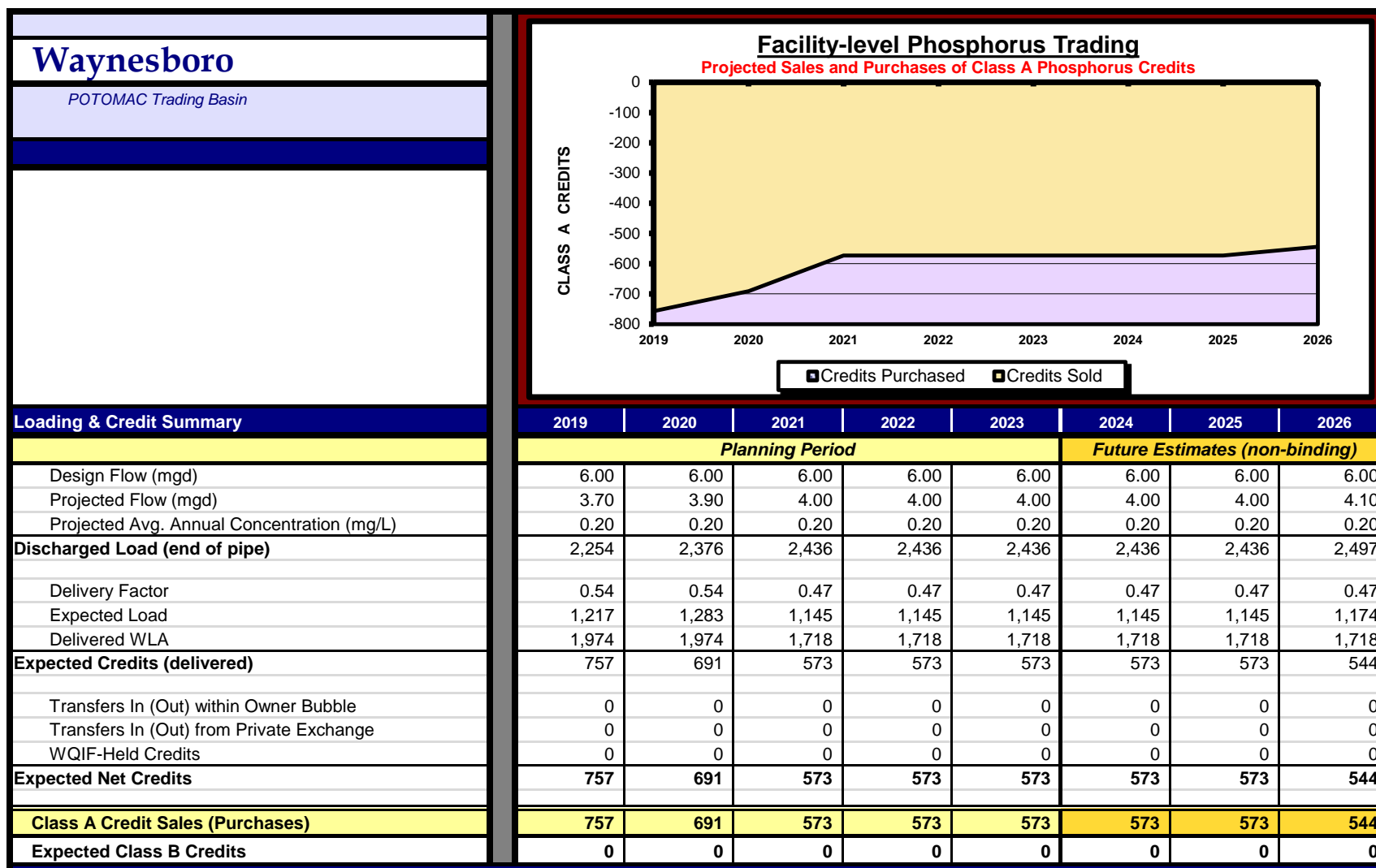


## NITROGEN FACILITY SUMMARY





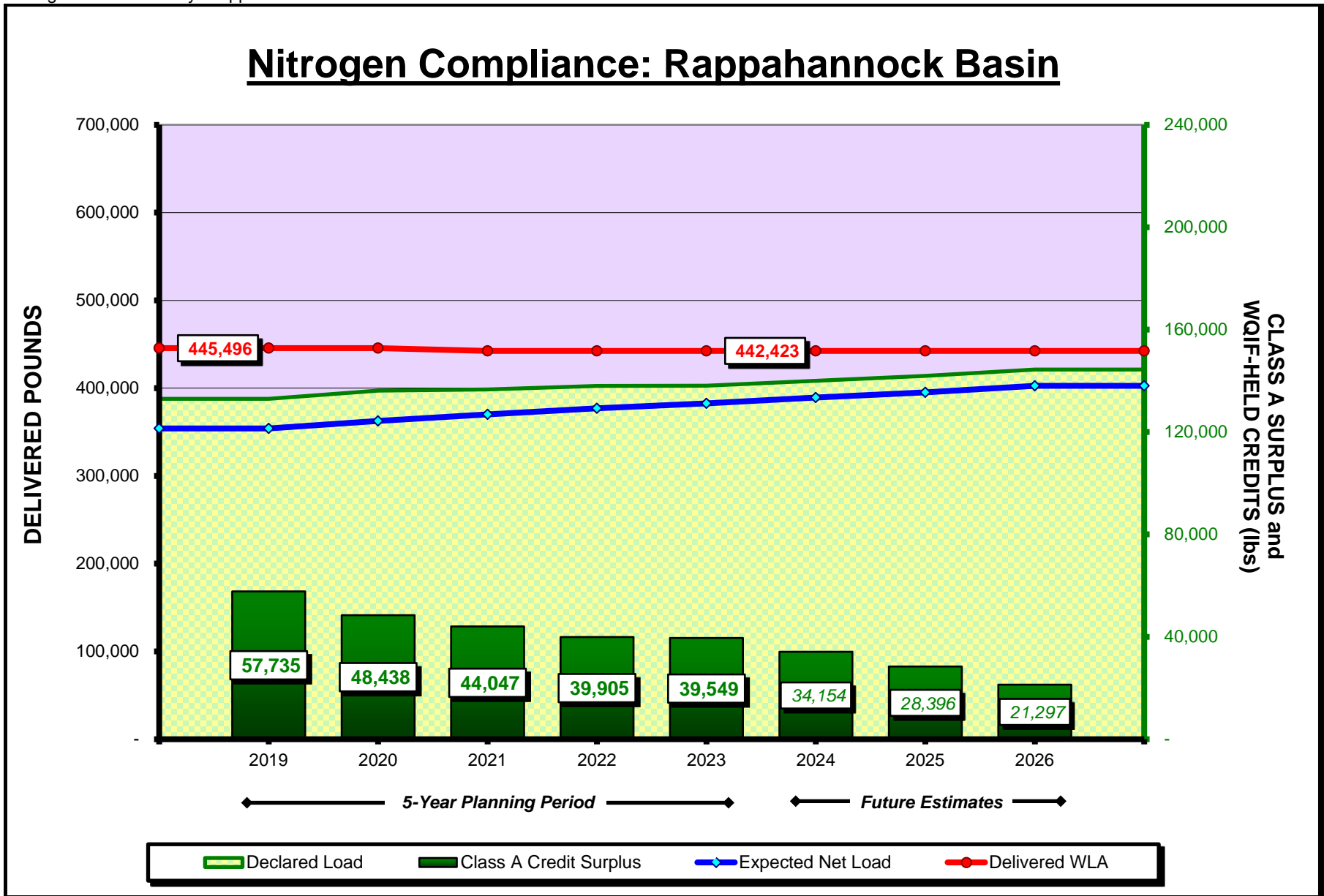
## PHOSPHORUS FACILITY SUMMARY



SECTION 3

# Rappahannock River Basin Exchange Compliance Plan







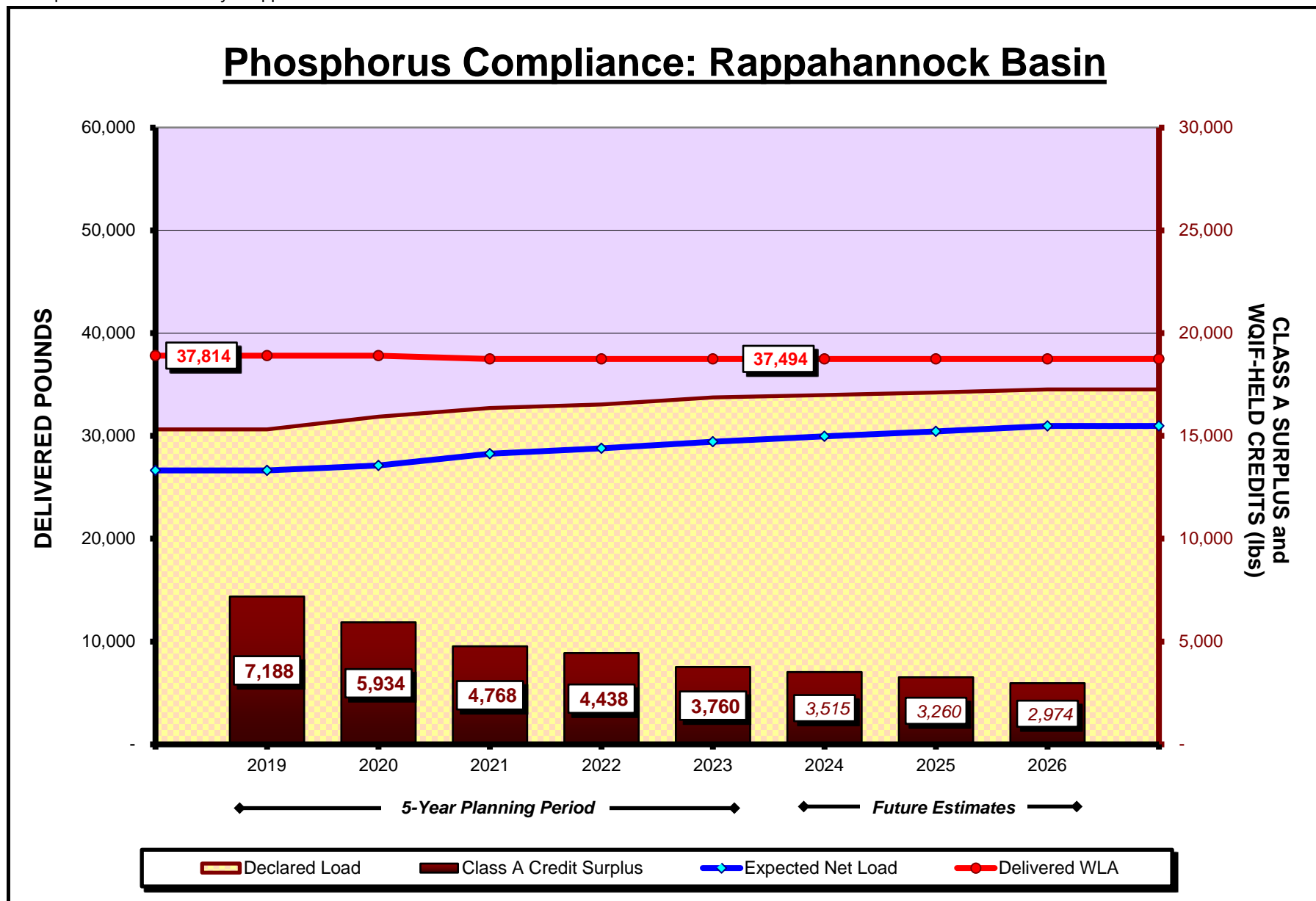
















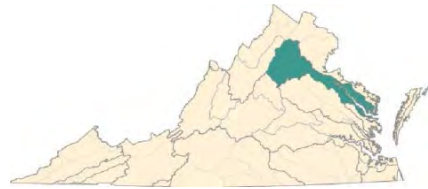




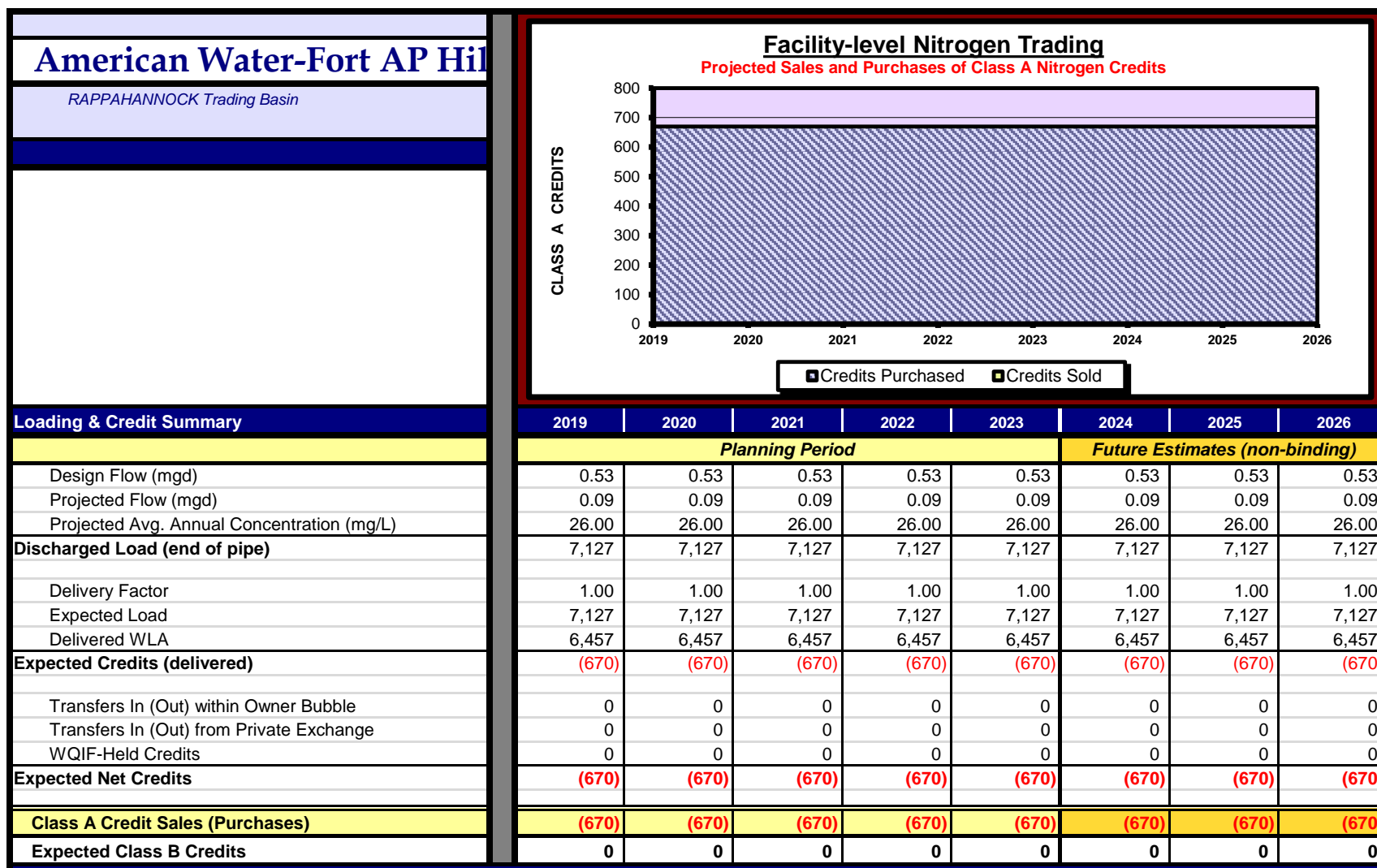


# Rappahannock River Basin

Supplemental Information for Individual Facilities



## NITROGEN FACILITY SUMMARY

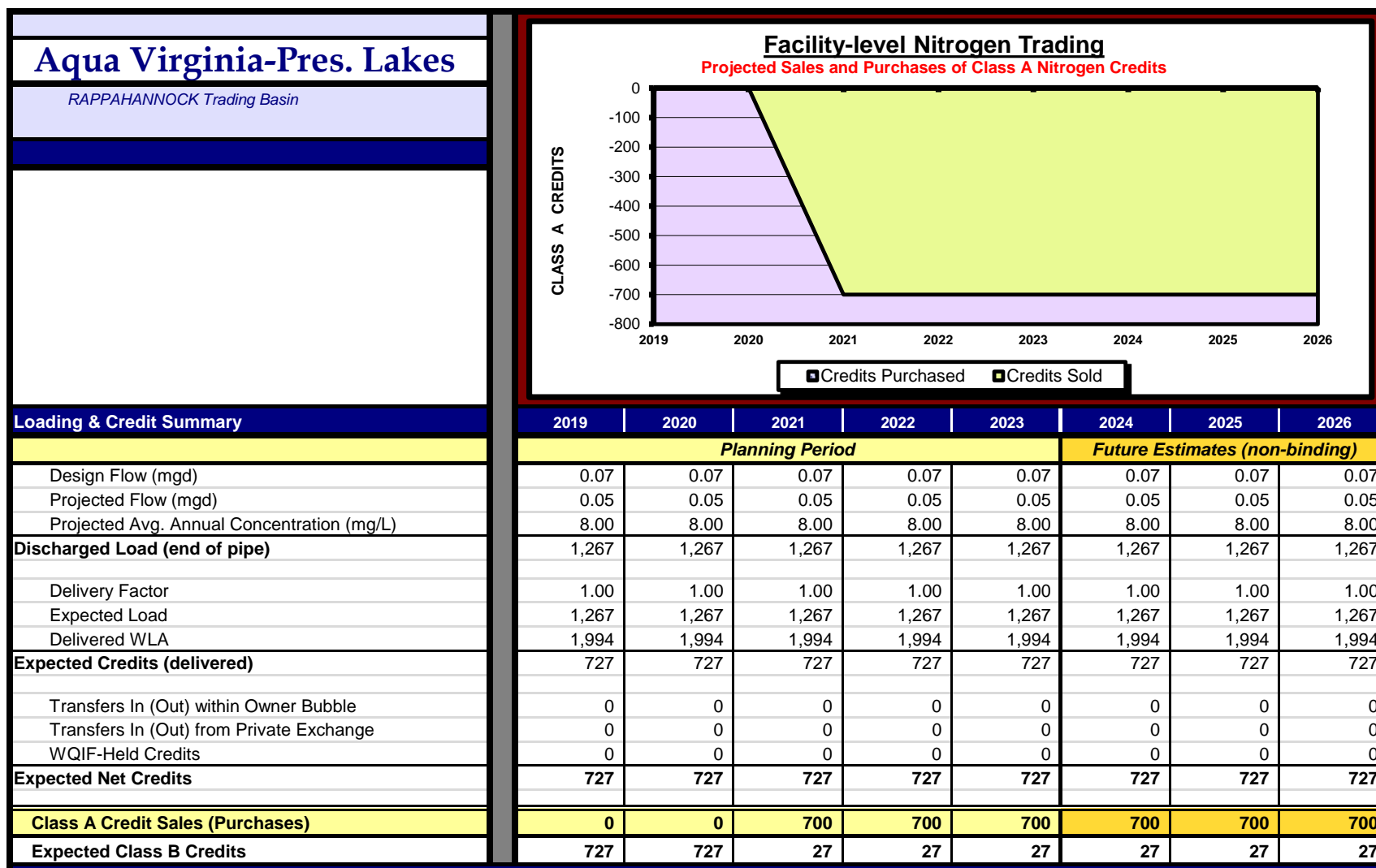




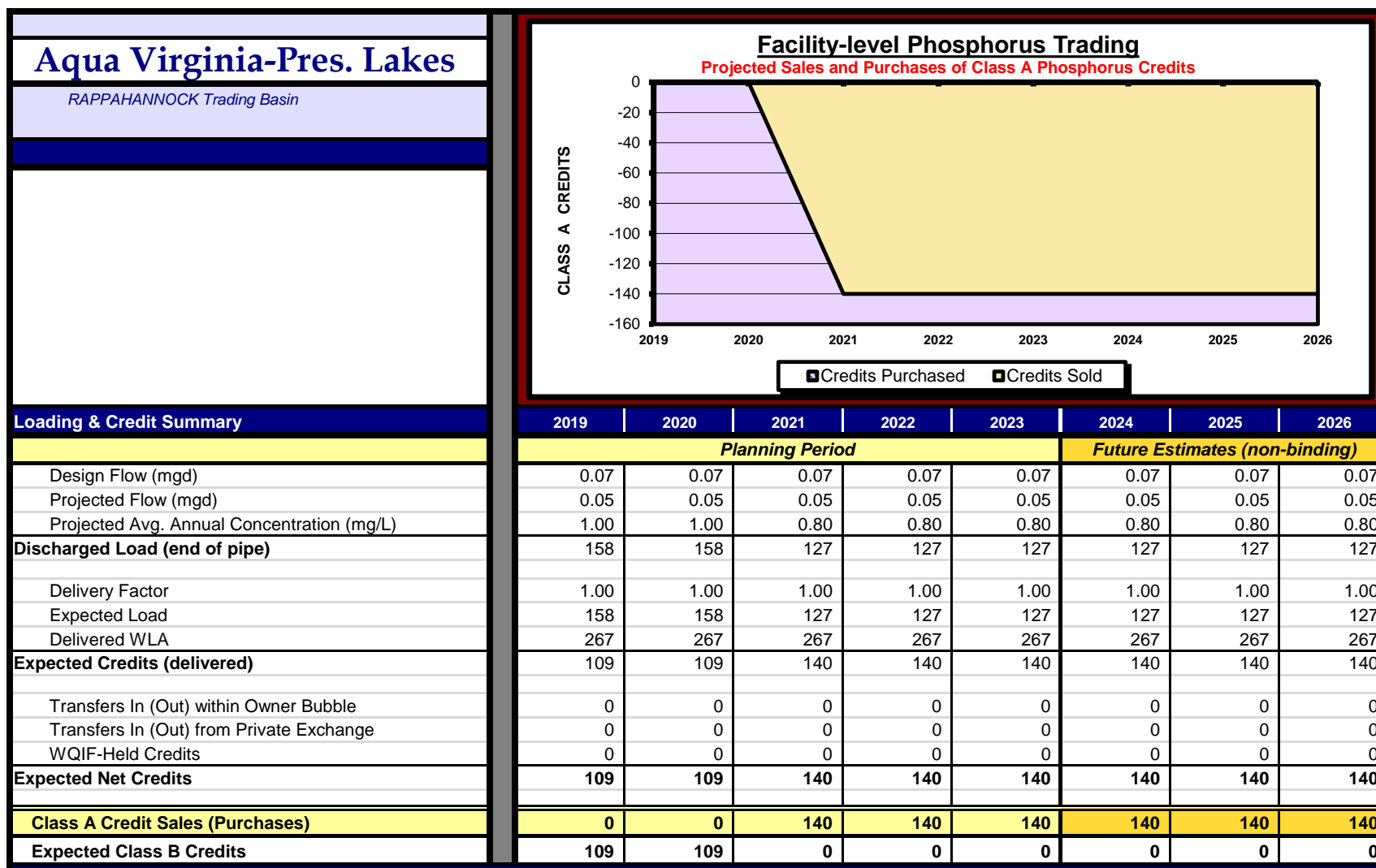
## PHOSPHORUS FACILITY SUMMARY

<div> <div>American Water-Fort AP Hill</div> <div>RAPPAHANNOCK Trading Basin</div> <div></div> </div>		<div> <div>Facility-level Phosphorus Trading</div> <div>Projected Sales and Purchases of Class A Phosphorus Credits</div> </div>							
Loading & Credit Summary		2019	2020	2021	2022	2023	2024	2025	2026
		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Projected Flow (mgd)		0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Projected Avg. Annual Concentration (mg/L)		1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40
Discharged Load (end of pipe)		384	384	384	384	384	384	384	384
Delivery Factor		0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load		380	380	384	384	384	384	384	384
Delivered WLA		479	479	484	484	484	484	484	484
Expected Credits (delivered)		99	99	100	100	100	100	100	100
Transfers In (Out) within Owner Bubble		0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		99	99	100	100	100	100	100	100
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		99	99	100	100	100	100	100	100

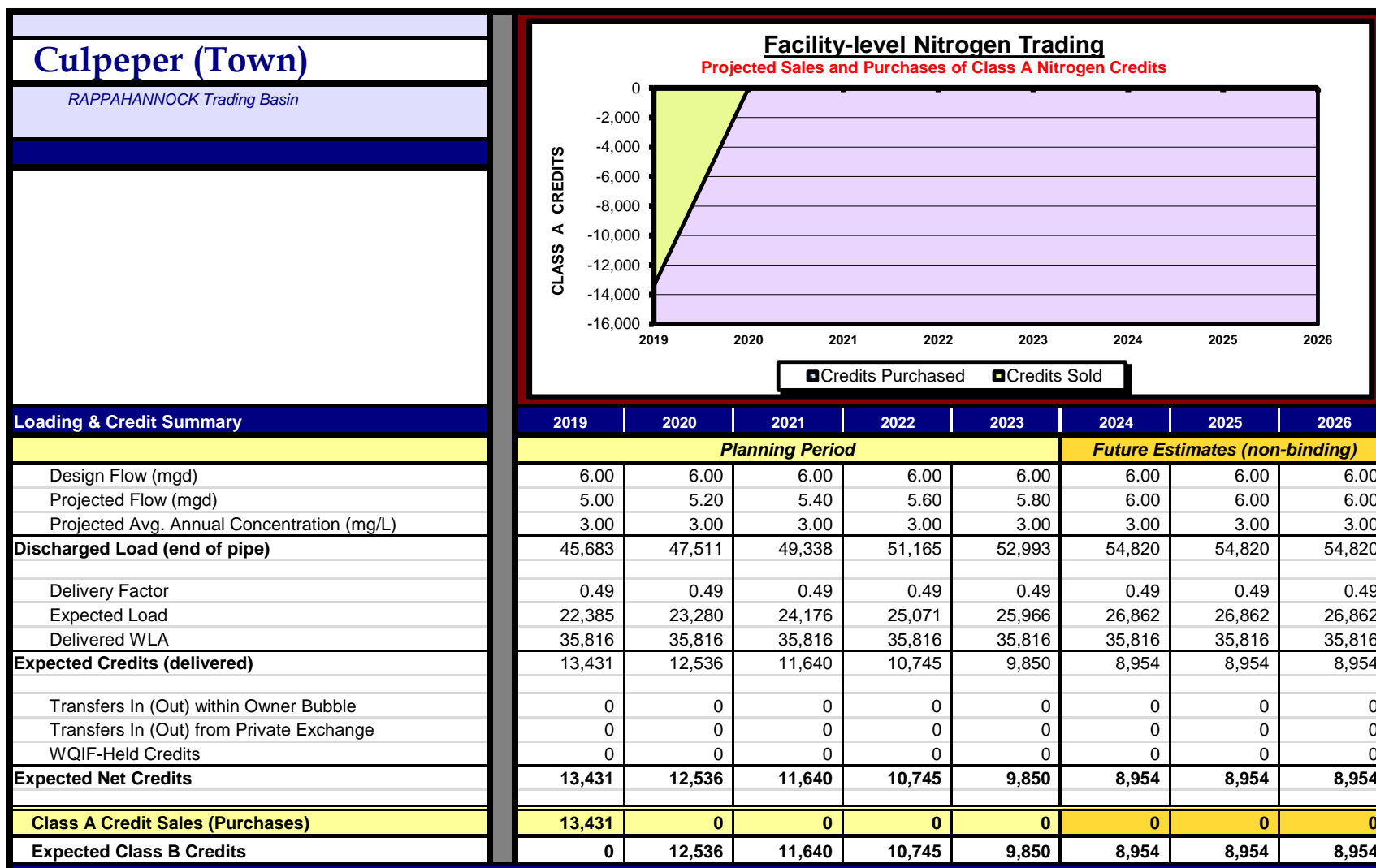
## NITROGEN FACILITY SUMMARY



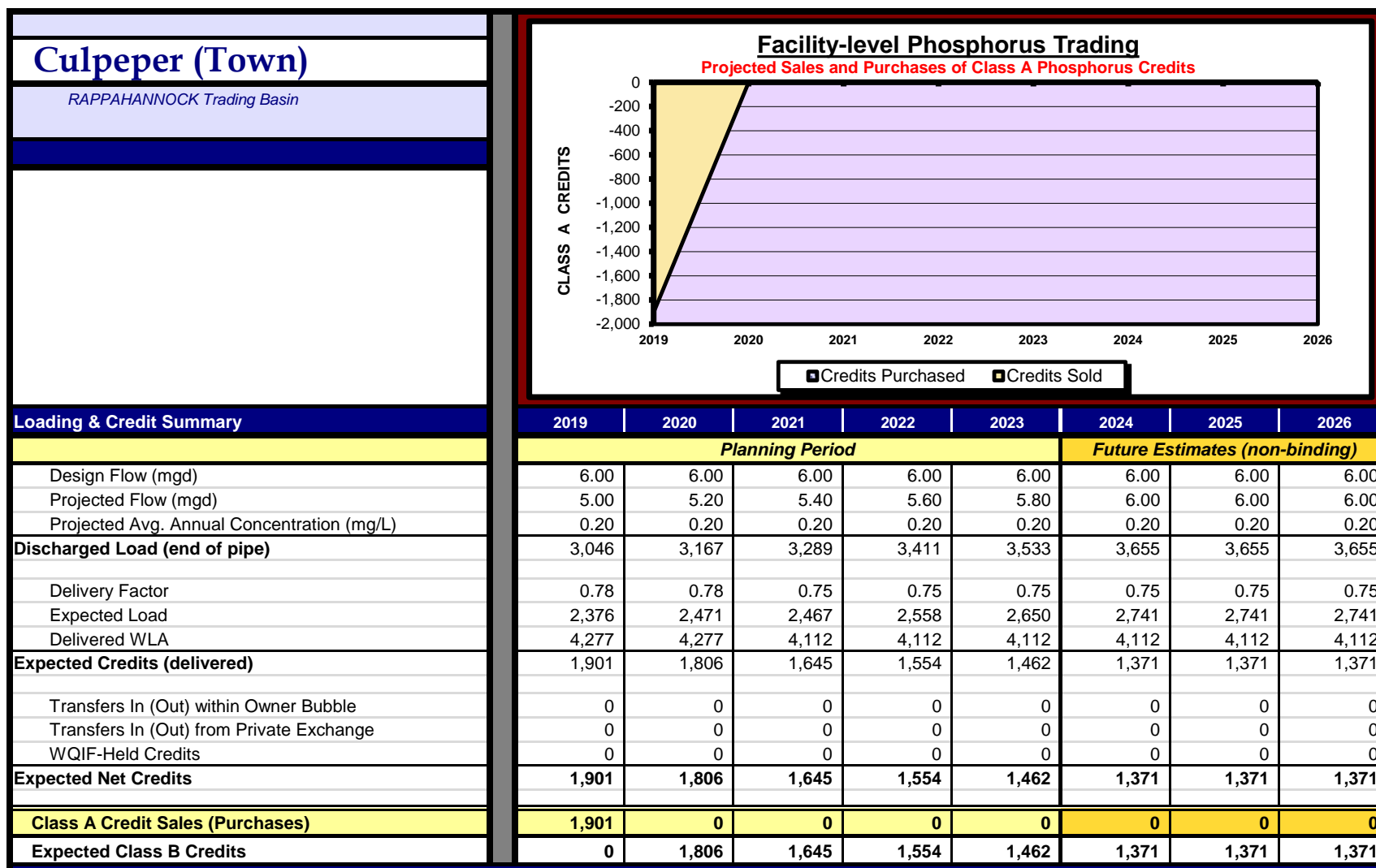
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## Owner Bubble: Fauquier County Water and Sanitation Authority

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

NITROGEN Credits		Exchange 5-year Planning Period					Future Projections		
Credits Transferred within Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
Marshall Remington	278	371	463	556	648	741	834	926	
	(278)	(371)	(463)	(556)	(648)	(741)	(834)	(926)	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
TOTAL (must sum to 0)	-	-	-	-	-	-	-	-	
Credits Available outside Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
Marshall Remington	-	-	-	-	-	-	-	-	
	3,661	3,449	3,237	3,025	2,814	2,601	2,389	2,177	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
Expected Net Credits	3,661	3,449	3,237	3,025	2,814	2,601	2,389	2,177	
Class A Sales (Purchases)	0	0	0	0	0	0	0	0	
Expected Class B Credits	3,661	3,449	3,237	3,025	2,814	2,601	2,389	2,177	
WQIF-Held Credits	0	0	0	0	0	0	0	0	

PHOSPHORUS Credits		Exchange 5-year Planning Period					Future Projections		
Credits Transferred within Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
Marshall Remington	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
TOTAL (must sum to 0)	-	-	-	-	-	-	-	-	
Credits Available outside Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
Marshall Remington	183	169	151	137	124	110	96	83	
	470	456	424	411	397	383	370	356	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
Expected Net Credits	653	625	575	548	521	493	466	439	
Class A Sales (Purchases)	0	0	0	0	0	0	0	0	
Expected Class B Credits	653	625	575	548	521	493	466	439	
WQIF-Held Credits	0	0	0	0	0	0	0	0	

## NITROGEN FACILITY SUMMARY

FCWSA-Marshall		<div> <div>Facility-level Nitrogen Trading</div> <div>Projected Sales and Purchases of Class A Nitrogen Credits</div> </div>							
RAPPAHANNOCK Trading Basin									
Loading & Credit Summary									
Design Flow (mgd)		2019	2020	2021	2022	2023	2024	2025	2026
Projected Flow (mgd)		Planning Period					Future Estimates (non-binding)		
Projected Avg. Annual Concentration (mg/L)		0.64	0.64	0.64	0.64	0.64	0.64	0.64	0.64
		0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52
		8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Discharged Load (end of pipe)		9,259	9,746	10,233	10,720	11,208	11,695	12,182	12,670
Delivery Factor		0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Expected Load		1,759	1,852	1,944	2,037	2,129	2,222	2,315	2,407
Delivered WLA		1,481	1,481	1,481	1,481	1,481	1,481	1,481	1,481
Expected Credits (delivered)		(278)	(371)	(463)	(556)	(648)	(741)	(834)	(926)
Transfers In (Out) within Owner Bubble		278	371	463	556	648	741	834	926
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		0	0	0	0	0	0	0	0
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		0	0	0	0	0	0	0	0

## NITROGEN FACILITY SUMMARY

## FCWSA-Remington

RAPPAHANNOCK Trading Basin

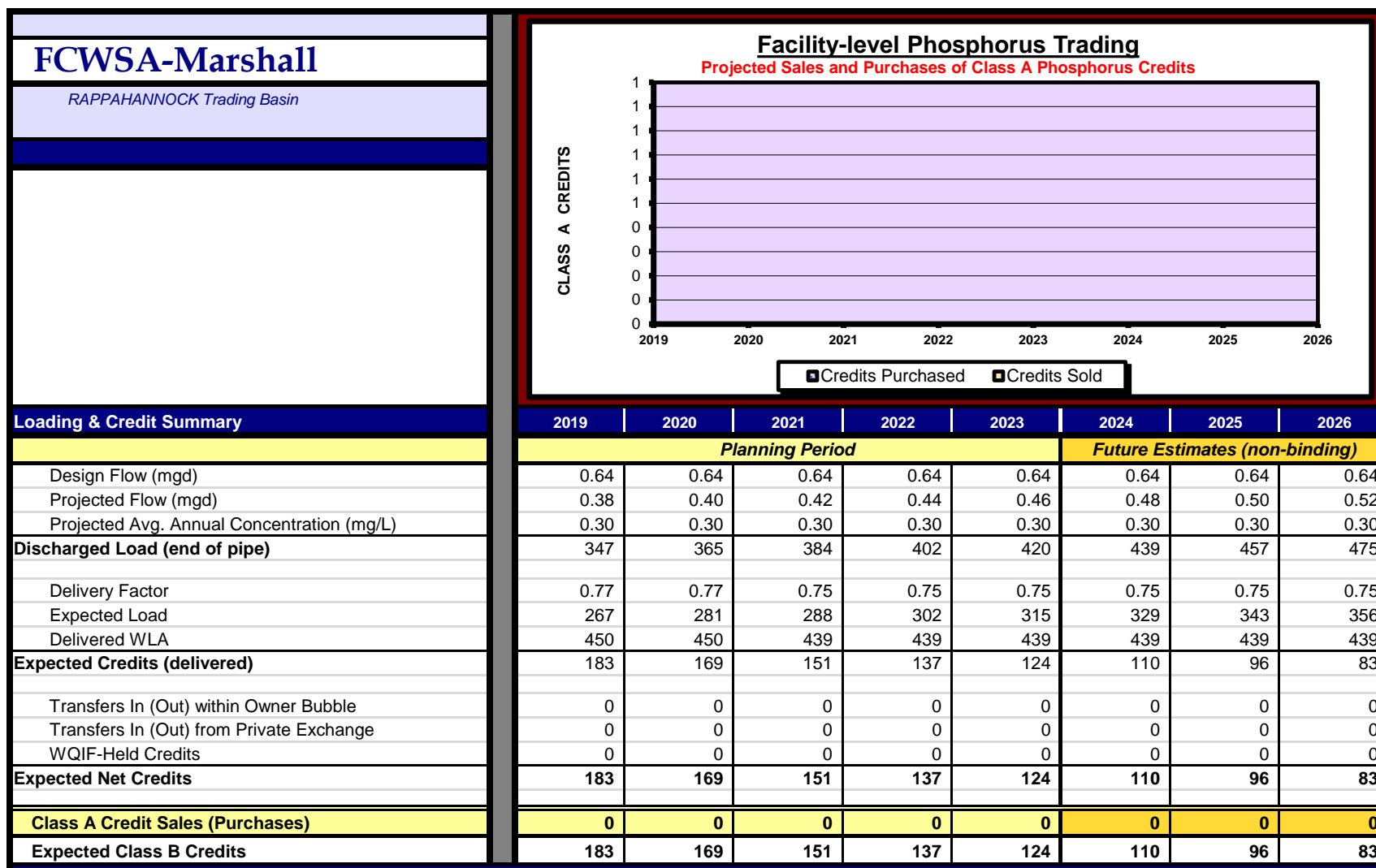
### Facility-level Nitrogen Trading

Projected Sales and Purchases of Class A Nitrogen Credits

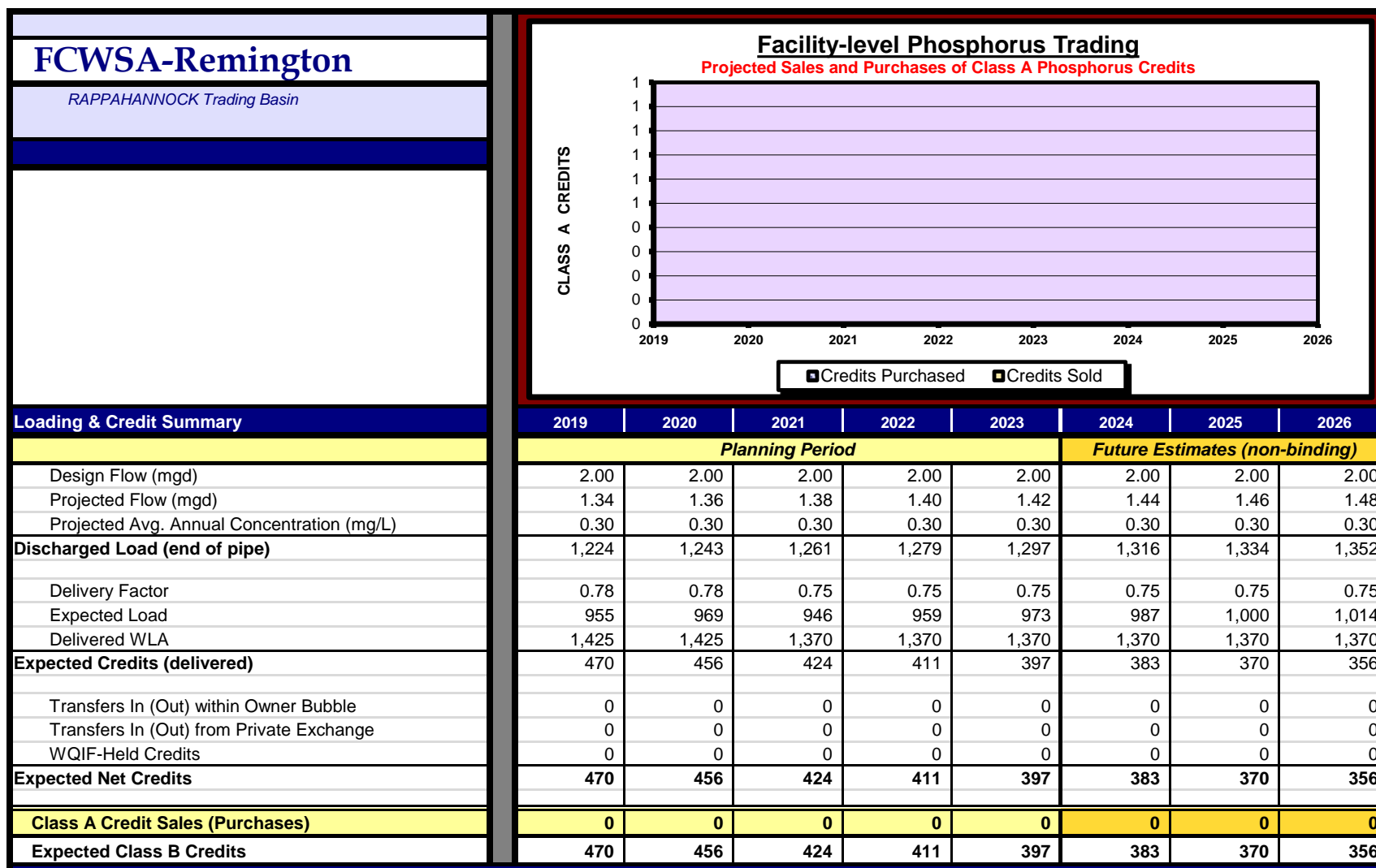
Loading & Credit Summary								
	2019	2020	2021	2022	2023	2024	2025	2026
	<i>Planning Period</i>					<i>Future Estimates (non-binding)</i>		
Design Flow (mgd)	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Projected Flow (mgd)	1.34	1.36	1.38	1.40	1.42	1.44	1.46	1.48
Projected Avg. Annual Concentration (mg/L)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
<b>Discharged Load (end of pipe)</b>	16,324	16,568	16,811	17,055	17,299	17,542	17,786	18,030
Delivery Factor	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Expected Load	7,999	8,118	8,238	8,357	8,476	8,596	8,715	8,835
Delivered WLA	11,938	11,938	11,938	11,938	11,938	11,938	11,938	11,938
<b>Expected Credits (delivered)</b>	3,939	3,820	3,700	3,581	3,462	3,342	3,223	3,103
Transfers In (Out) within Owner Bubble	(278)	(371)	(463)	(556)	(648)	(741)	(834)	(926)
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	3,661	3,449	3,237	3,025	2,814	2,601	2,389	2,177
<b>Class A Credit Sales (Purchases)</b>	0	0	0	0	0	0	0	0
<b>Expected Class B Credits</b>	3,661	3,449	3,237	3,025	2,814	2,601	2,389	2,177



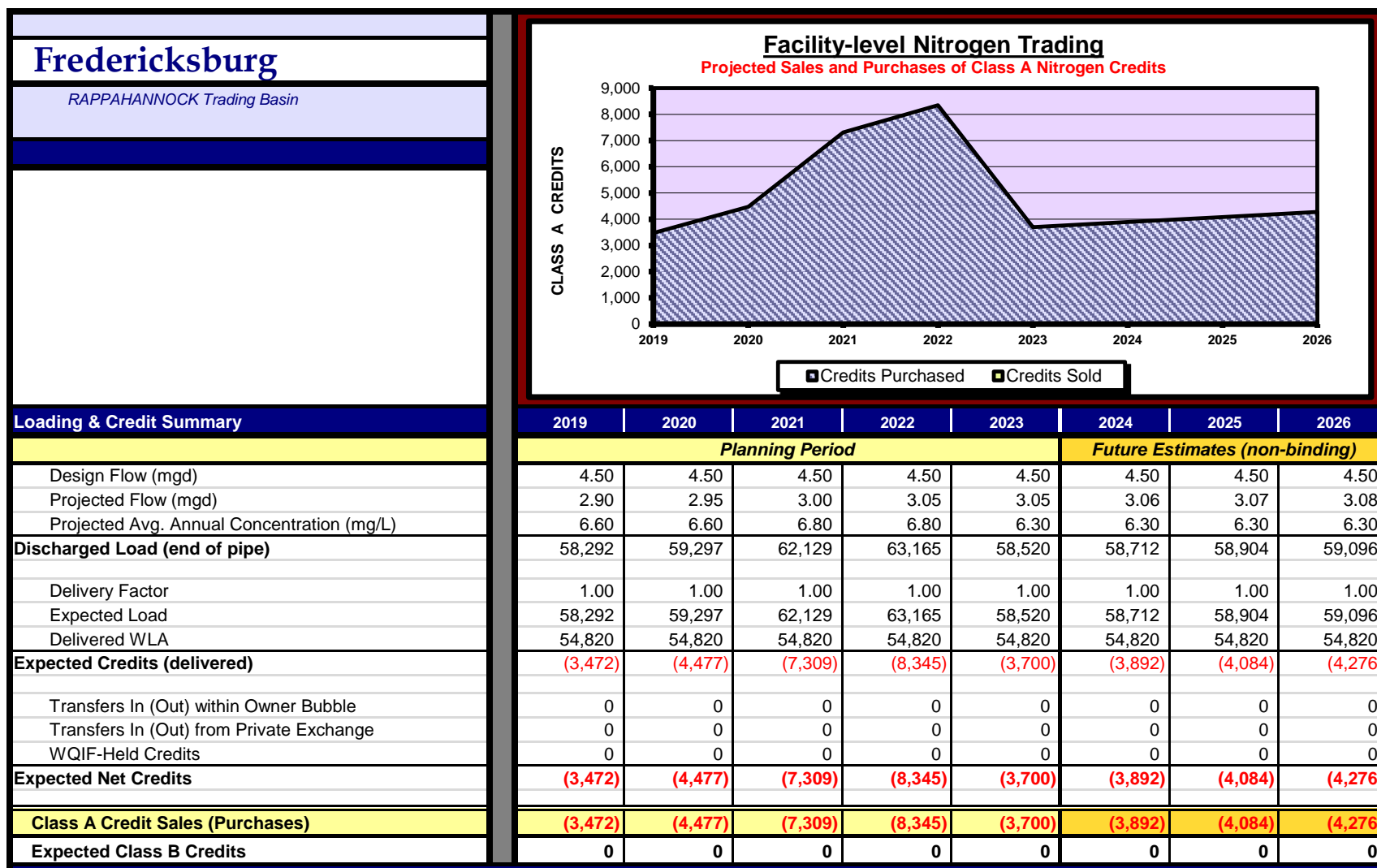
## PHOSPHORUS FACILITY SUMMARY



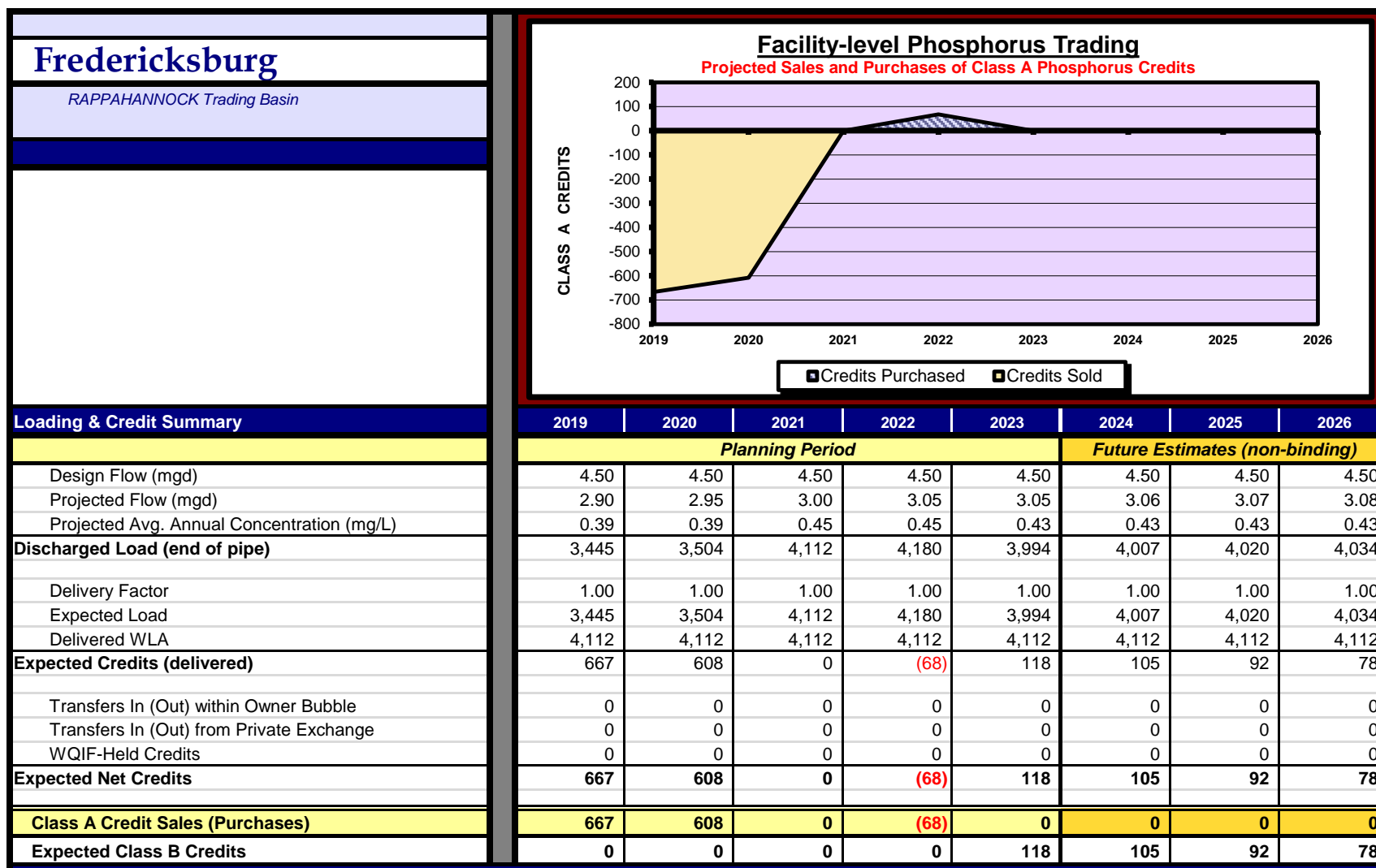
## PHOSPHORUS FACILITY SUMMARY



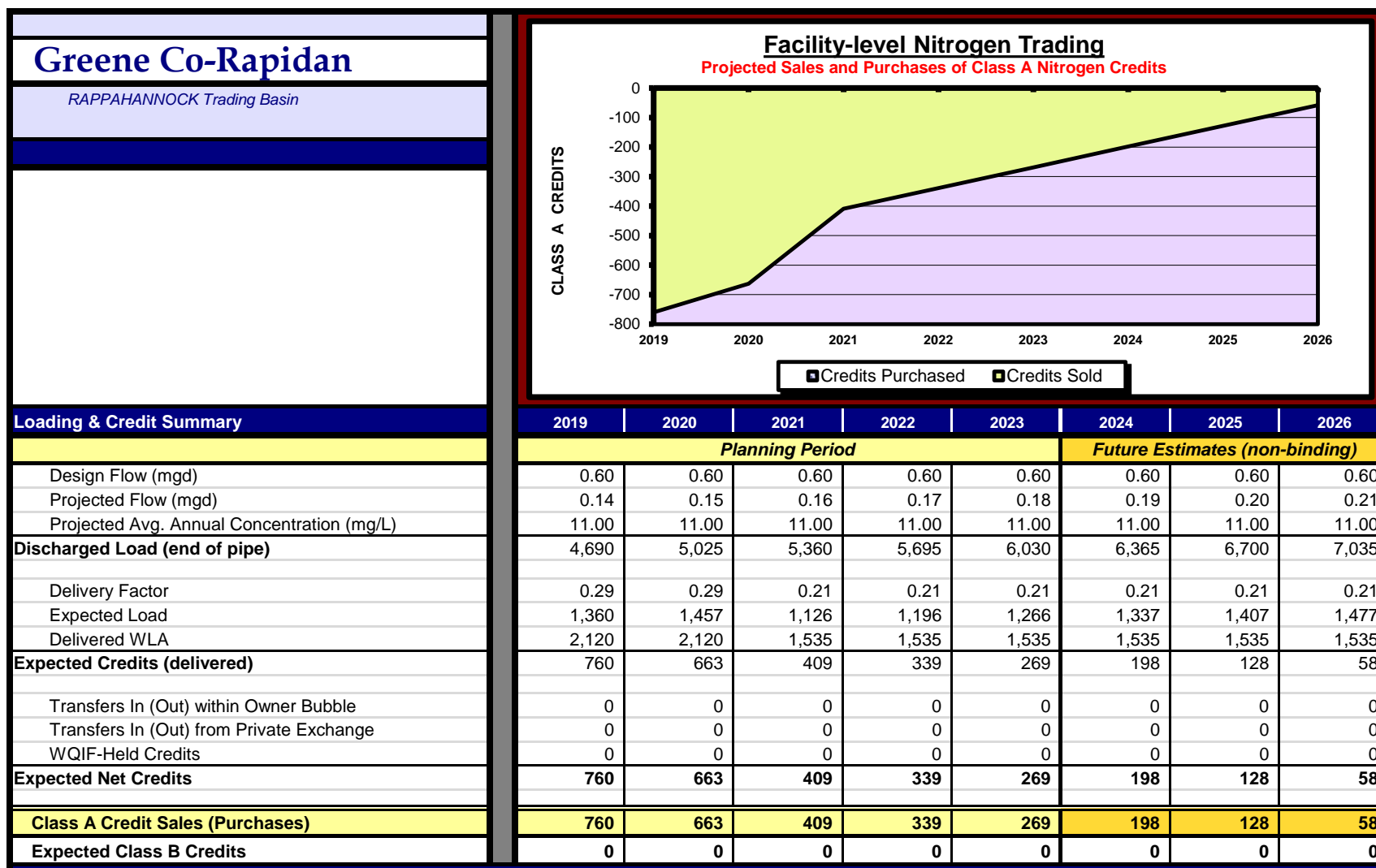
## NITROGEN FACILITY SUMMARY



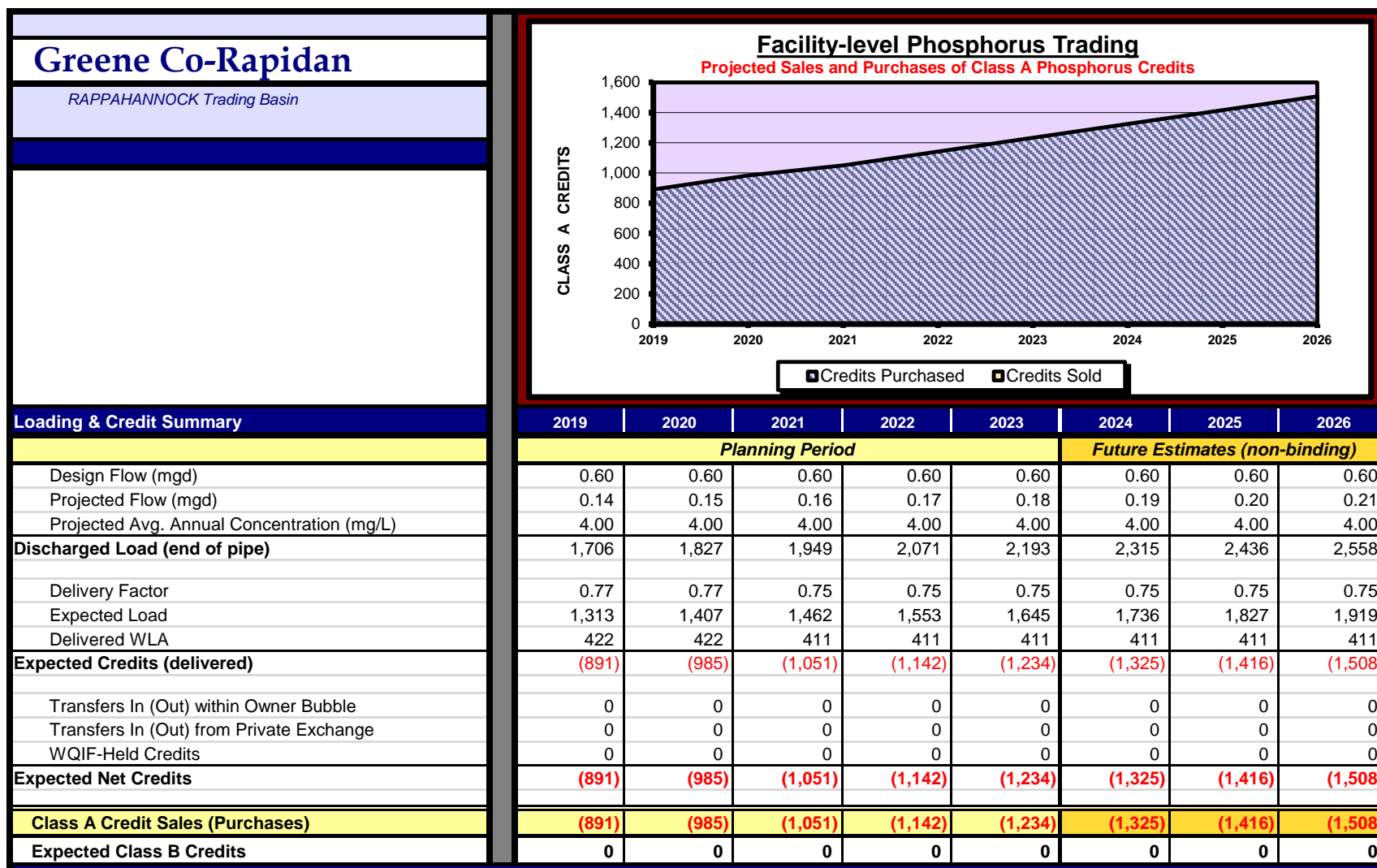
## PHOSPHORUS FACILITY SUMMARY



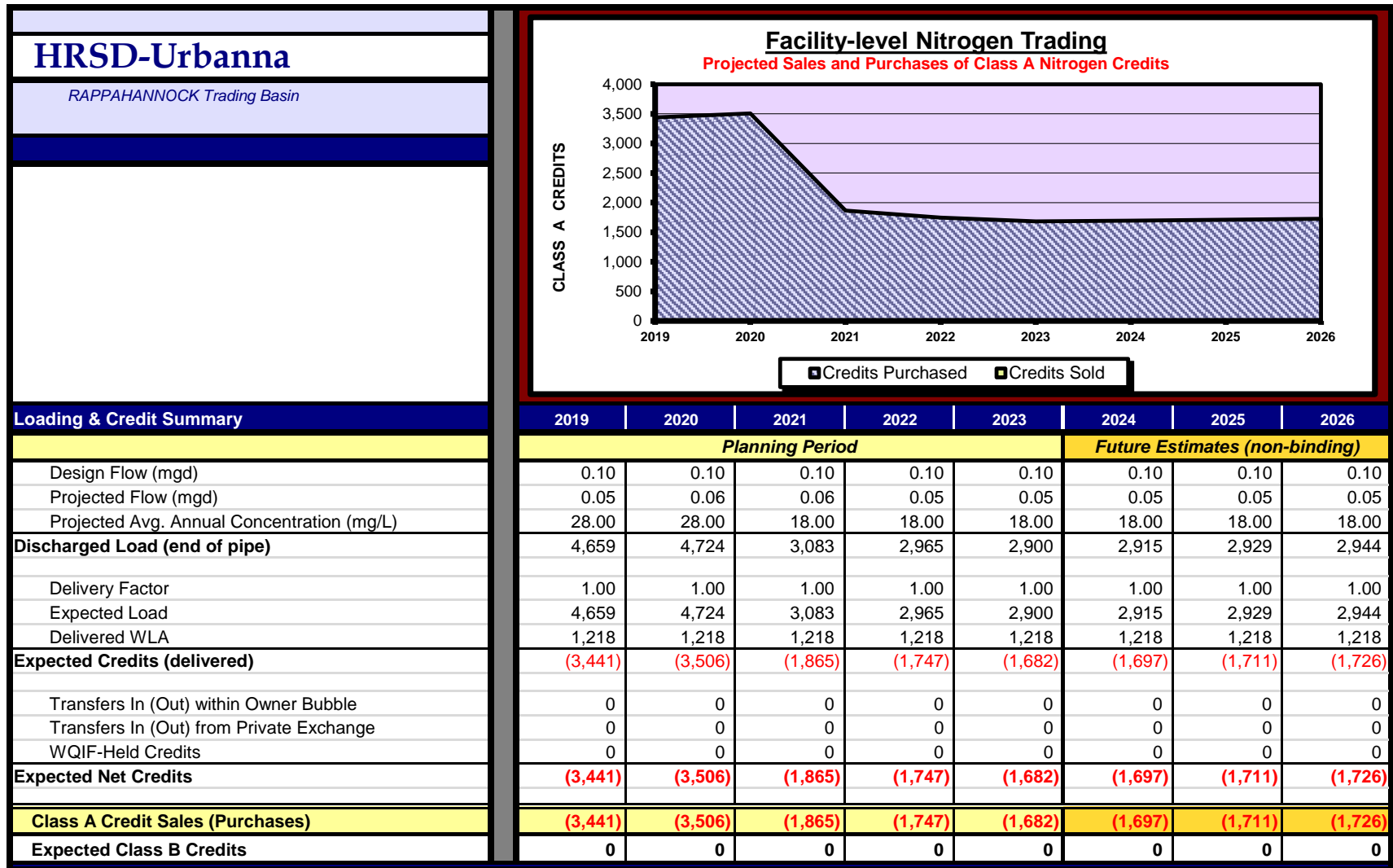
## NITROGEN FACILITY SUMMARY



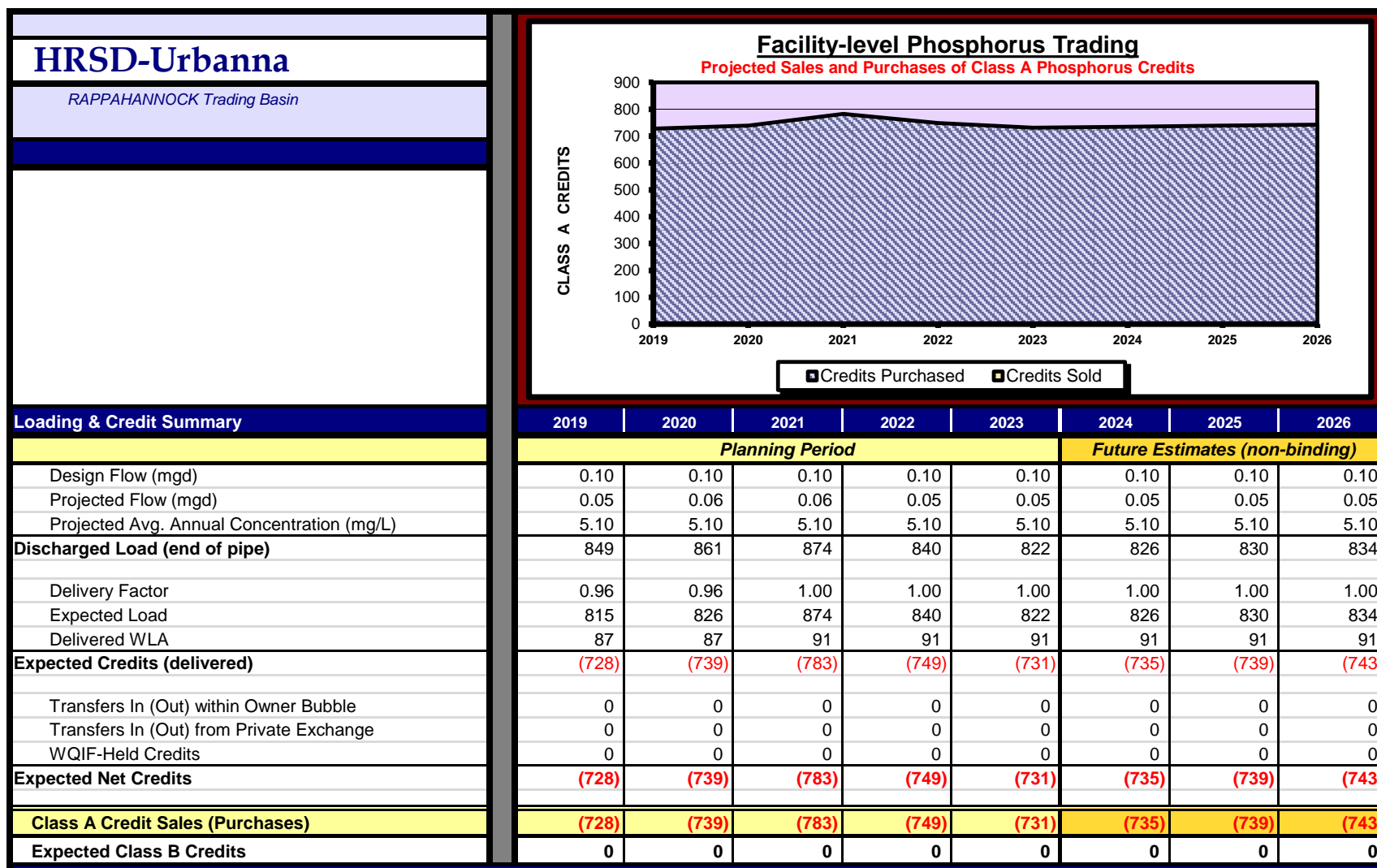
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY





## Owner Bubble: King George County SA (Rappahannock)

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

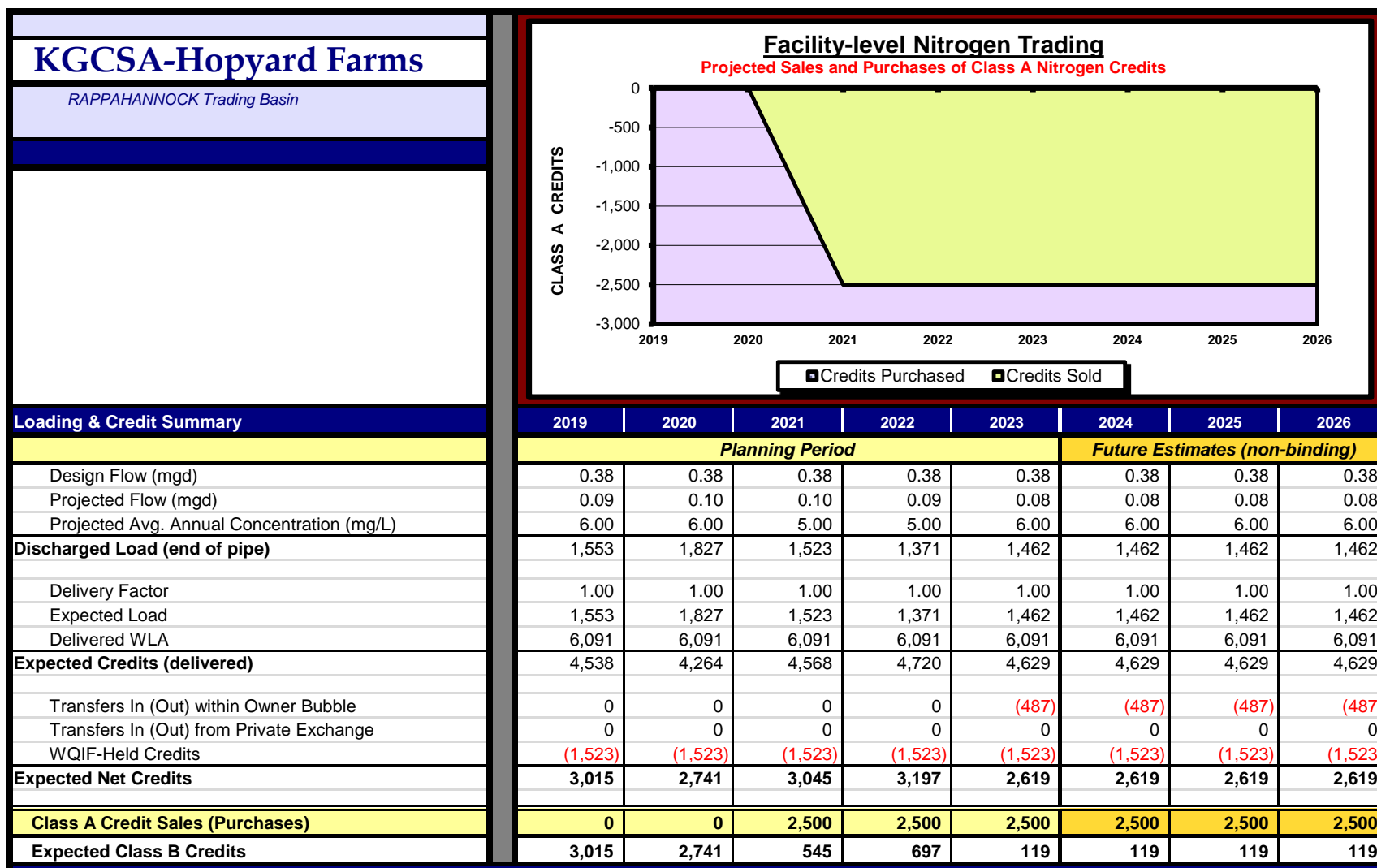
The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

NITROGEN Credits		Exchange 5-year Planning Period					Future Projections		
Credits Transferred within Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
Hopyard Farms	-	-	-	-	(487)	(487)	(487)	(487)	
Oakland Park	-	-	-	-	487	487	487	487	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
TOTAL (must sum to 0)	-	-	-	-	-	-	-	-	
Credits Available outside Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
Hopyard Farms	3,015	2,741	3,045	3,197	2,619	2,619	2,619	2,619	
Oakland Park	335	183	183	335	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
Expected Net Credits	3,350	2,924	3,228	3,532	2,619	2,619	2,619	2,619	
Class A Sales (Purchases)	0	0	2,500	2,500	2,500	2,500	2,500	2,500	
Expected Class B Credits	3,350	2,924	728	1,032	119	119	119	119	
WQIF-Held Credits	1,523	1,523	1,523	1,523	1,523	1,523	1,523	1,523	

PHOSPHORUS Credits		Exchange 5-year Planning Period					Future Projections		
Credits Transferred within Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
Hopyard Farms Oakland Park	(9)	(24)	(24)	(9)	(91)	(91)	(91)	(91)	
	9	24	24	9	91	91	91	91	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
TOTAL (must sum to 0)	-	-	-	-	-	-	-	-	
Credits Available outside Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
Hopyard Farms Oakland Park	202	164	167	197	33	33	33	33	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
Expected Net Credits	202	164	167	197	33	33	33	33	
Class A Sales (Purchases)	0	0	0	0	0	0	0	0	
Expected Class B Credits	202	164	167	197	33	33	33	33	
WQIF-Held Credits	113	113	114	114	114	114	114	114	

## NITROGEN FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

## KGCSA-Oakland Park

RAPPAHANNOCK Trading Basin

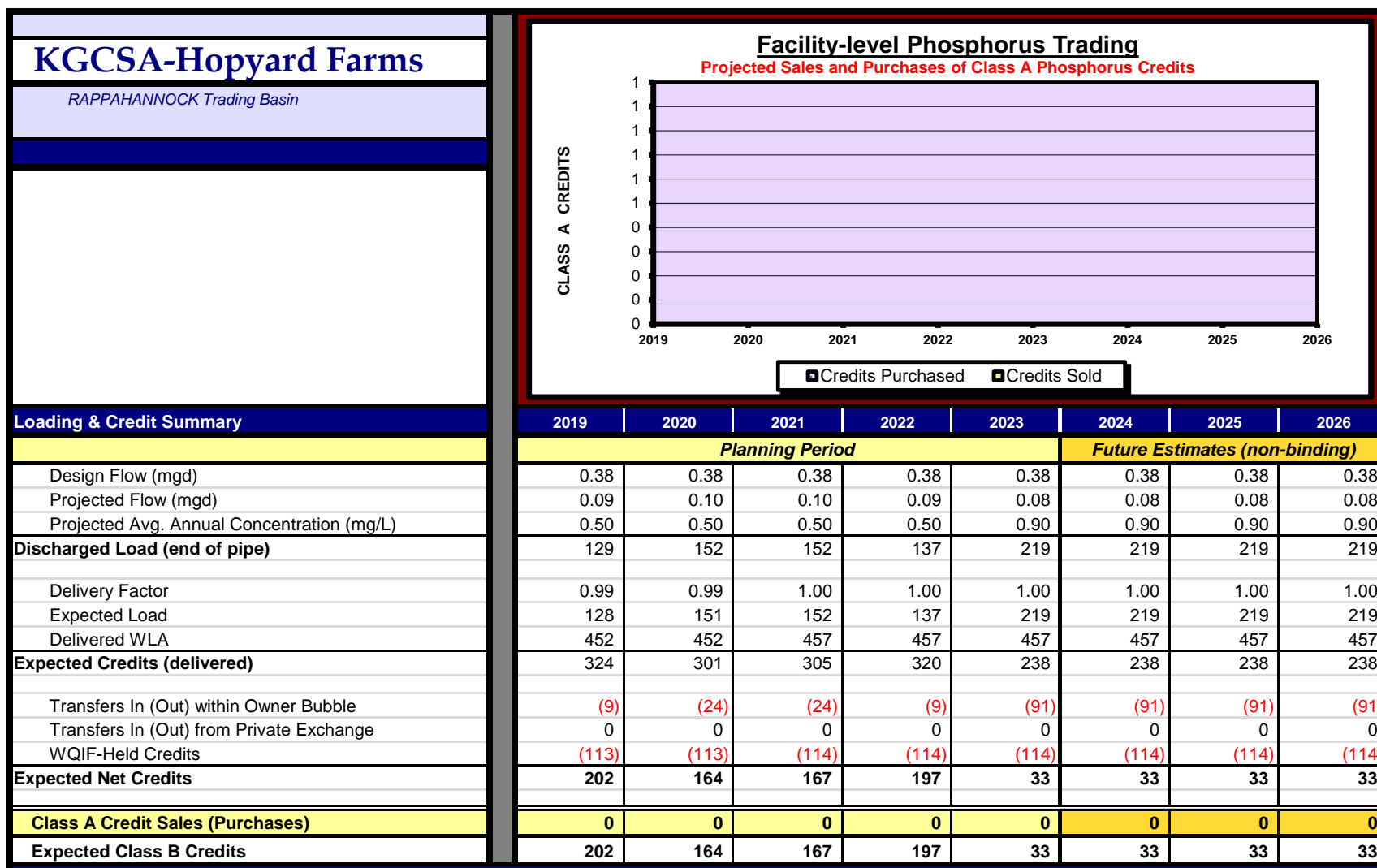
### Facility-level Nitrogen Trading

Projected Sales and Purchases of Class A Nitrogen Credits

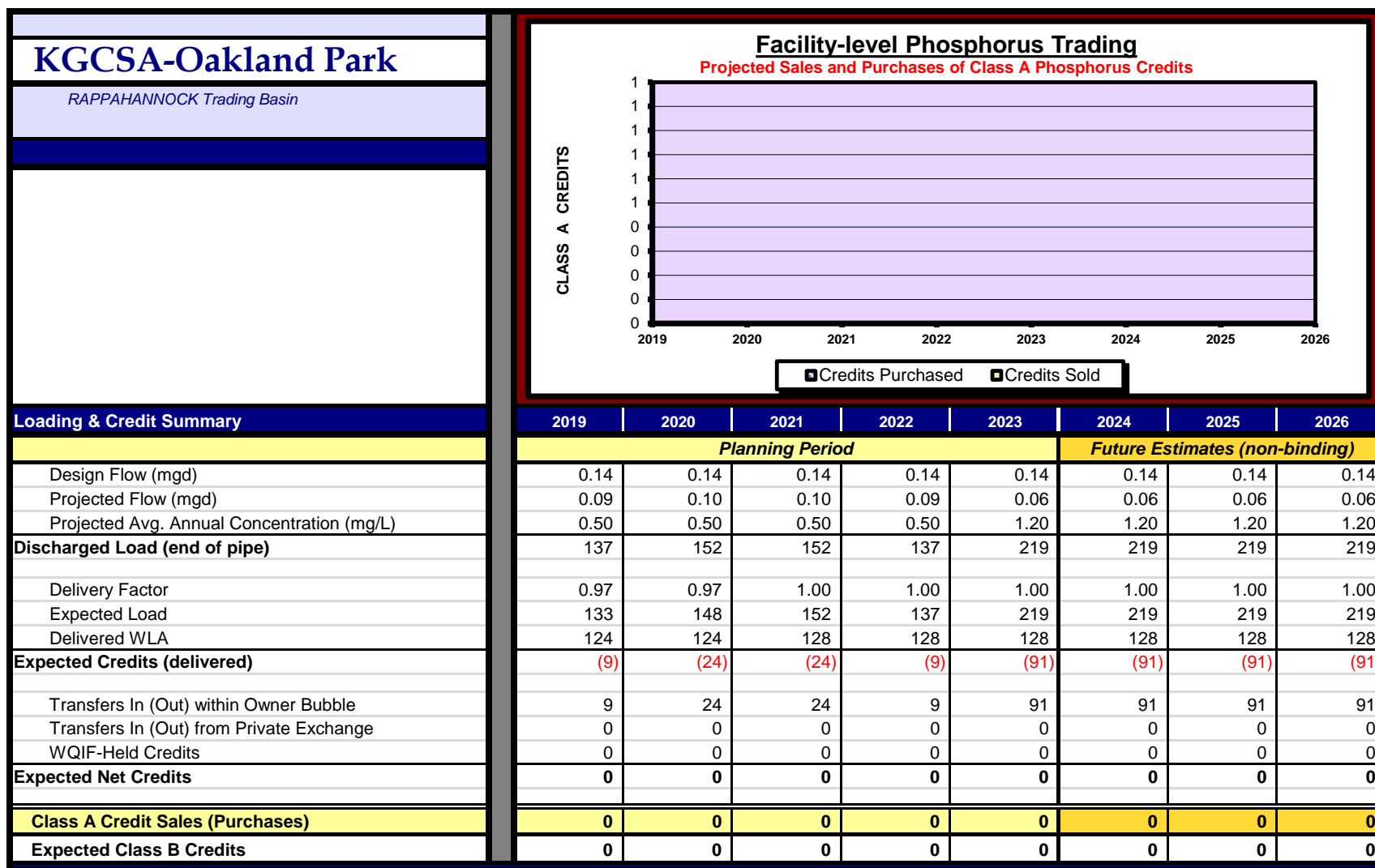
Year	Credits Purchased	Credits Sold
2019	0.14	0.09
2020	0.14	0.10
2021	0.14	0.10
2022	0.14	0.09
2023	0.14	0.06
2024	0.14	0.06
2025	0.14	0.06
2026	0.14	0.06

Loading & Credit Summary								
	2019	2020	2021	2022	2023	2024	2025	2026
<i>Planning Period</i>								
Design Flow (mgd)	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Projected Flow (mgd)	0.09	0.10	0.10	0.09	0.06	0.06	0.06	0.06
Projected Avg. Annual Concentration (mg/L)	5.00	5.00	5.00	5.00	12.00	12.00	12.00	12.00
<b>Discharged Load (end of pipe)</b>	1,371	1,523	1,523	1,371	2,193	2,193	2,193	2,193
Delivery Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load	1,371	1,523	1,523	1,371	2,193	2,193	2,193	2,193
Delivered WLA	1,706	1,706	1,706	1,706	1,706	1,706	1,706	1,706
<b>Expected Credits (delivered)</b>	335	183	183	335	(487)	(487)	(487)	(487)
Transfers In (Out) within Owner Bubble	0	0	0	0	487	487	487	487
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	335	183	183	335	0	0	0	0
<b>Class A Credit Sales (Purchases)</b>	0	0	0	0	0	0	0	0
<b>Expected Class B Credits</b>	335	183	183	335	0	0	0	0

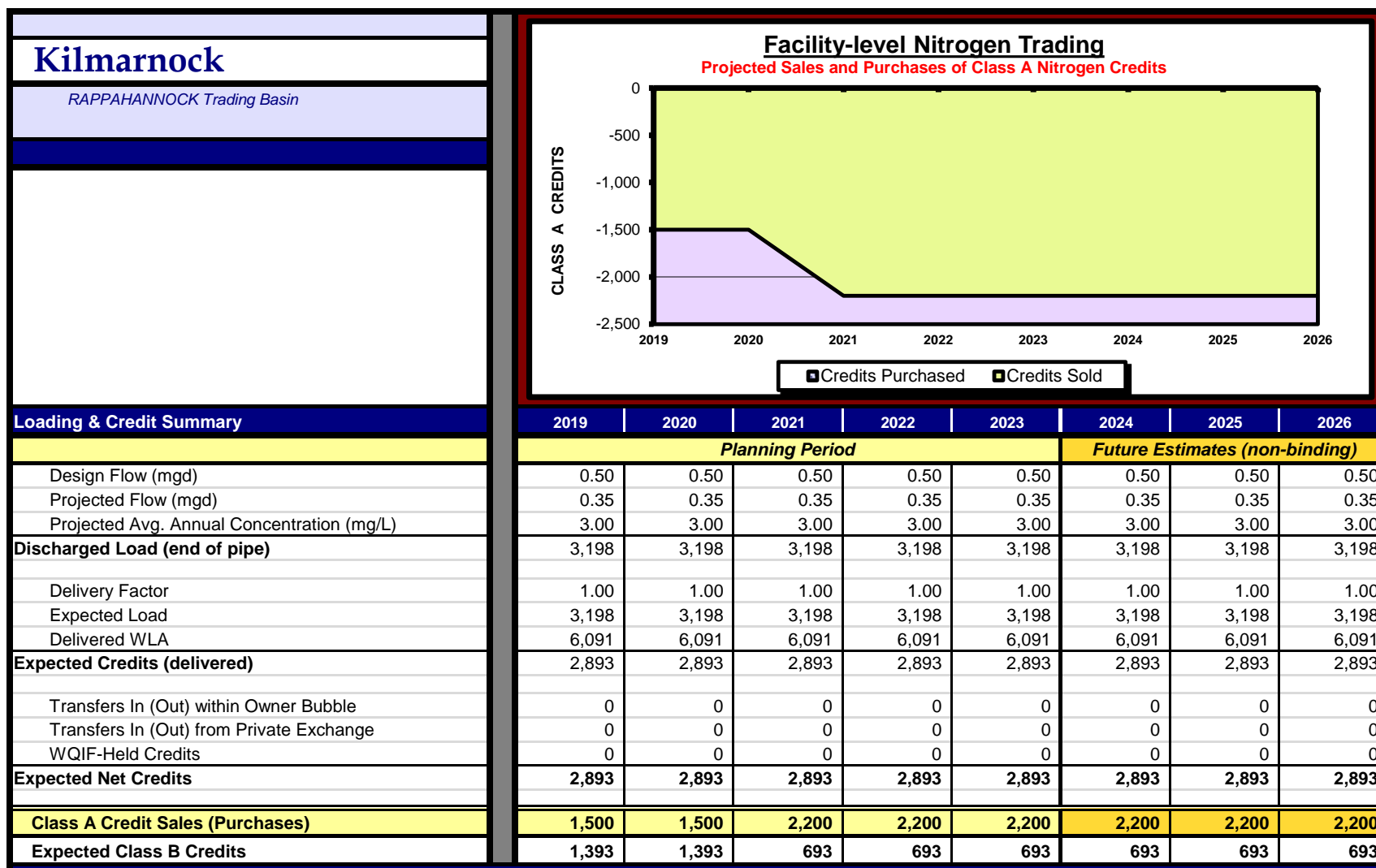
## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

## Kilmarnock

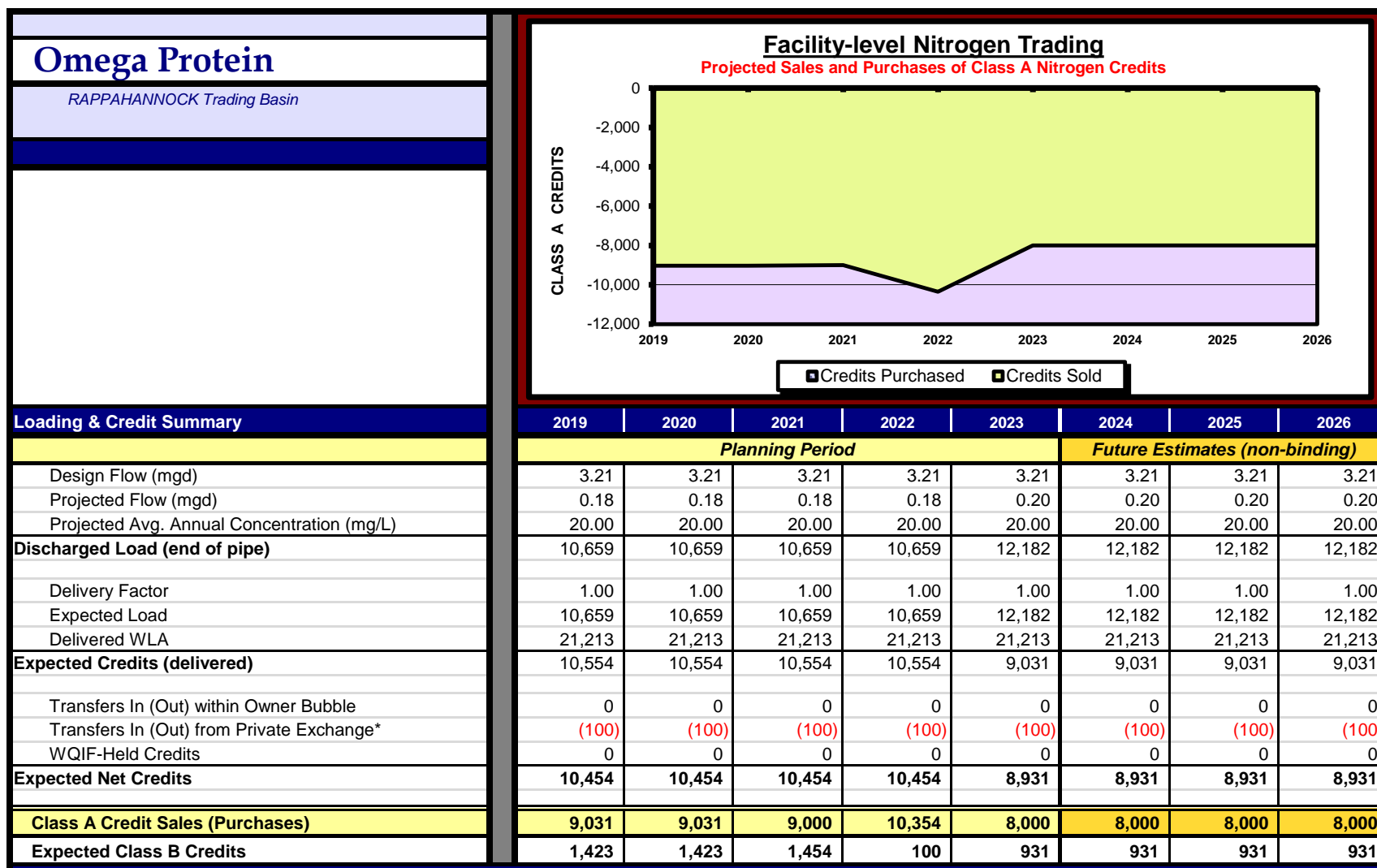
RAPPAHANNOCK Trading Basin

**Facility-level Phosphorus Trading**  
Projected Sales and Purchases of Class A Phosphorus Credits

Year	Credits Sold	Credits Purchased
2019	75	78
2020	75	78
2021	75	78
2022	75	78
2023	75	78
2024	75	78
2025	75	78
2026	75	78

Loading & Credit Summary								
	2019	2020	2021	2022	2023	2024	2025	2026
	Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Projected Flow (mgd)	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Projected Avg. Annual Concentration (mg/L)	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
<b>Discharged Load (end of pipe)</b>	320	320	320	320	320	320	320	320
Delivery Factor	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load	317	317	320	320	320	320	320	320
Delivered WLA	452	452	457	457	457	457	457	457
<b>Expected Credits (delivered)</b>	135	135	137	137	137	137	137	137
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	135	135	137	137	137	137	137	137
<b>Class A Credit Sales (Purchases)</b>	75	75	75	75	75	75	75	75
<b>Expected Class B Credits</b>	60	60	62	62	62	62	62	62

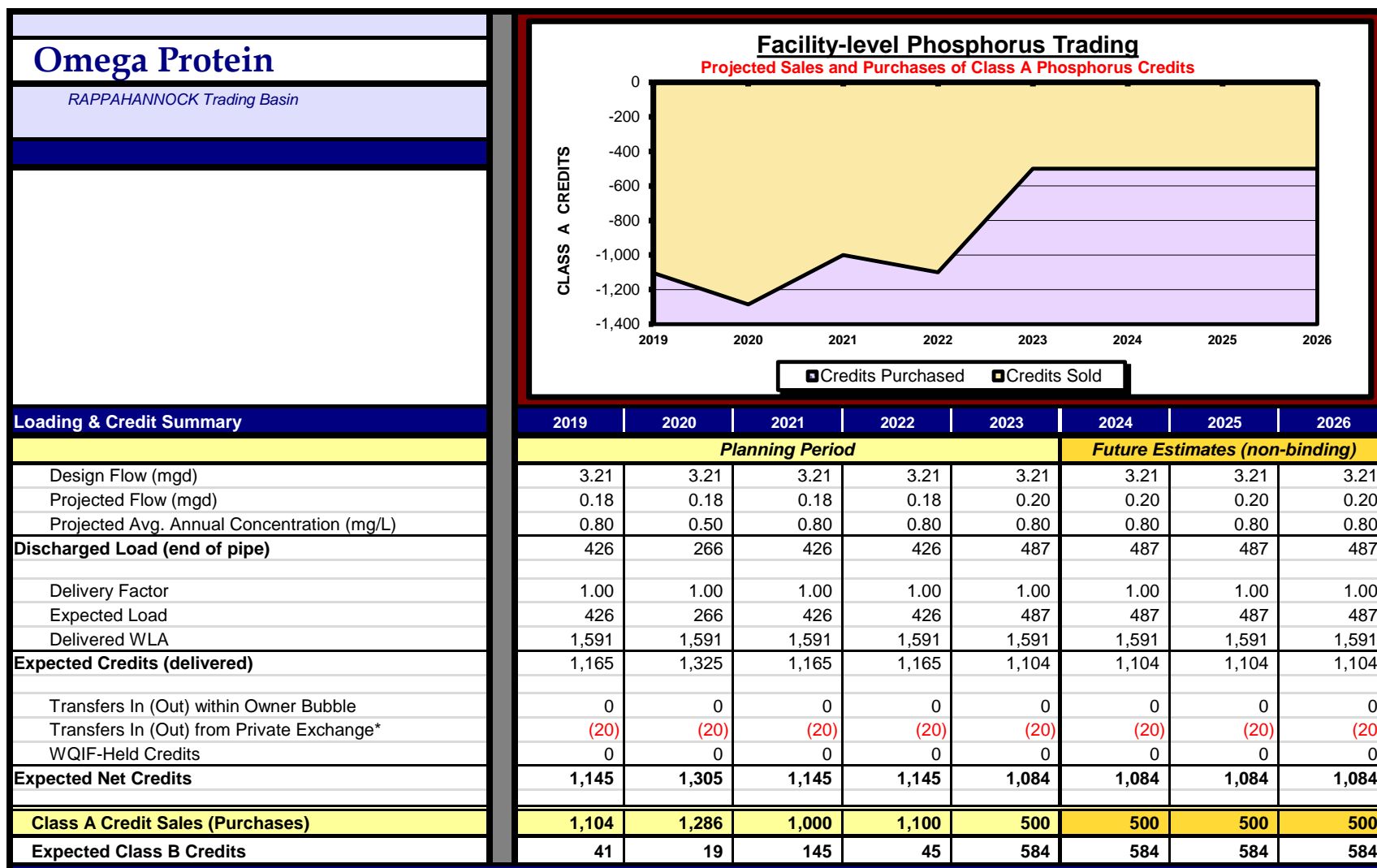
## NITROGEN FACILITY SUMMARY



\* Reflects private exchange with Children's Bible Ministries of Virginia, Inc.

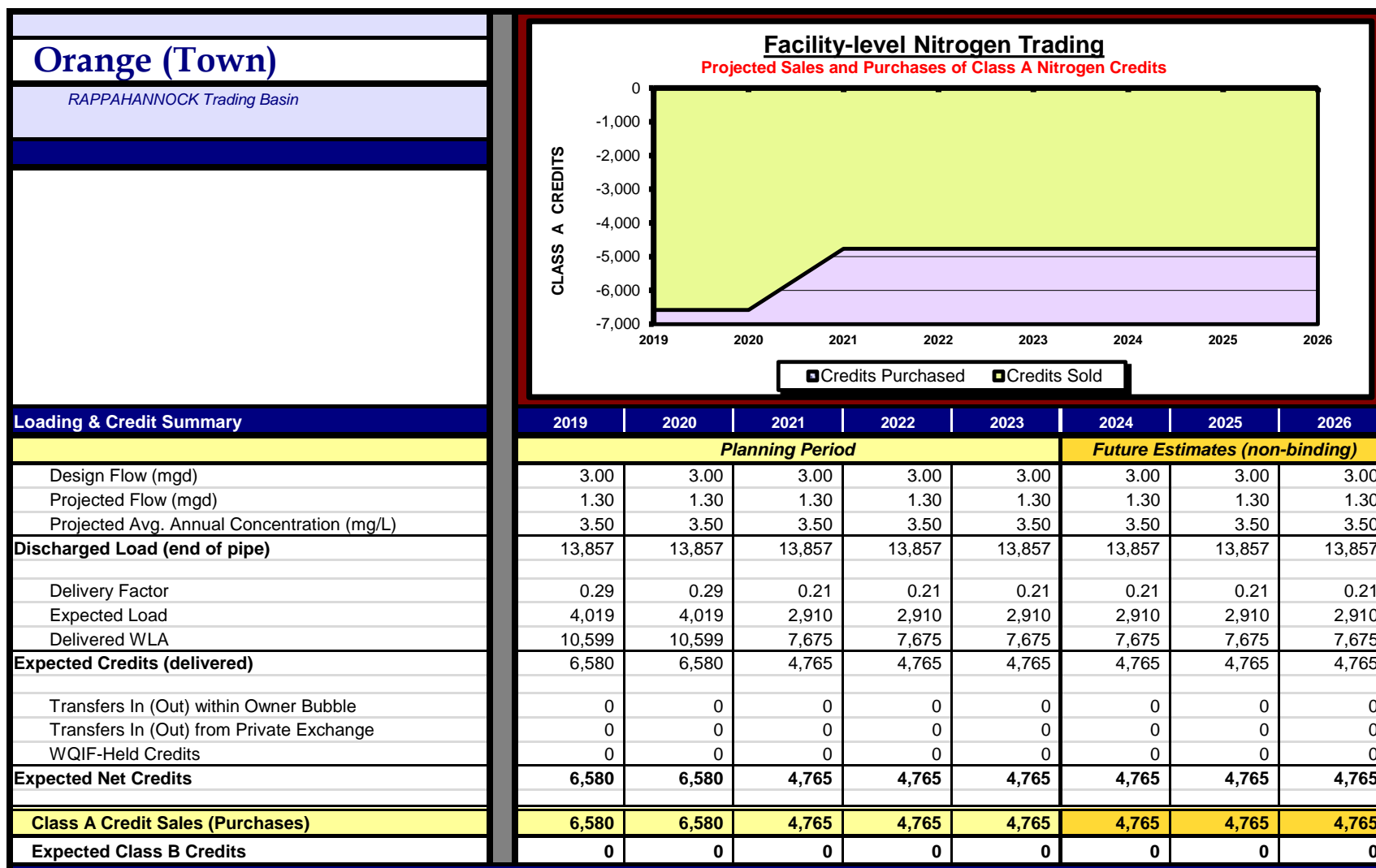


## PHOSPHORUS FACILITY SUMMARY

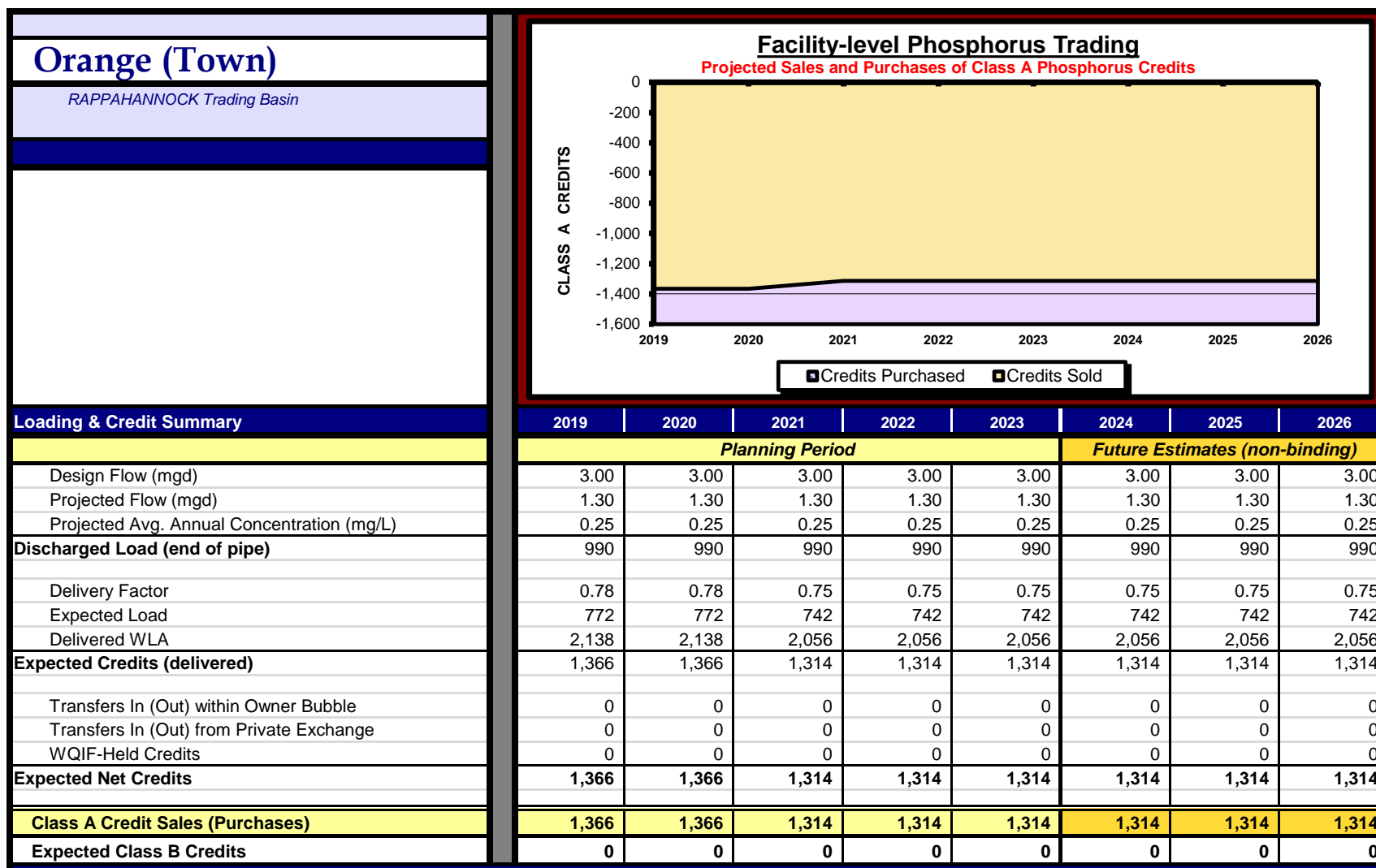


\* Reflects private exchange with Children's Bible Ministries of Virginia, Inc.

## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

## Reedville S.D.

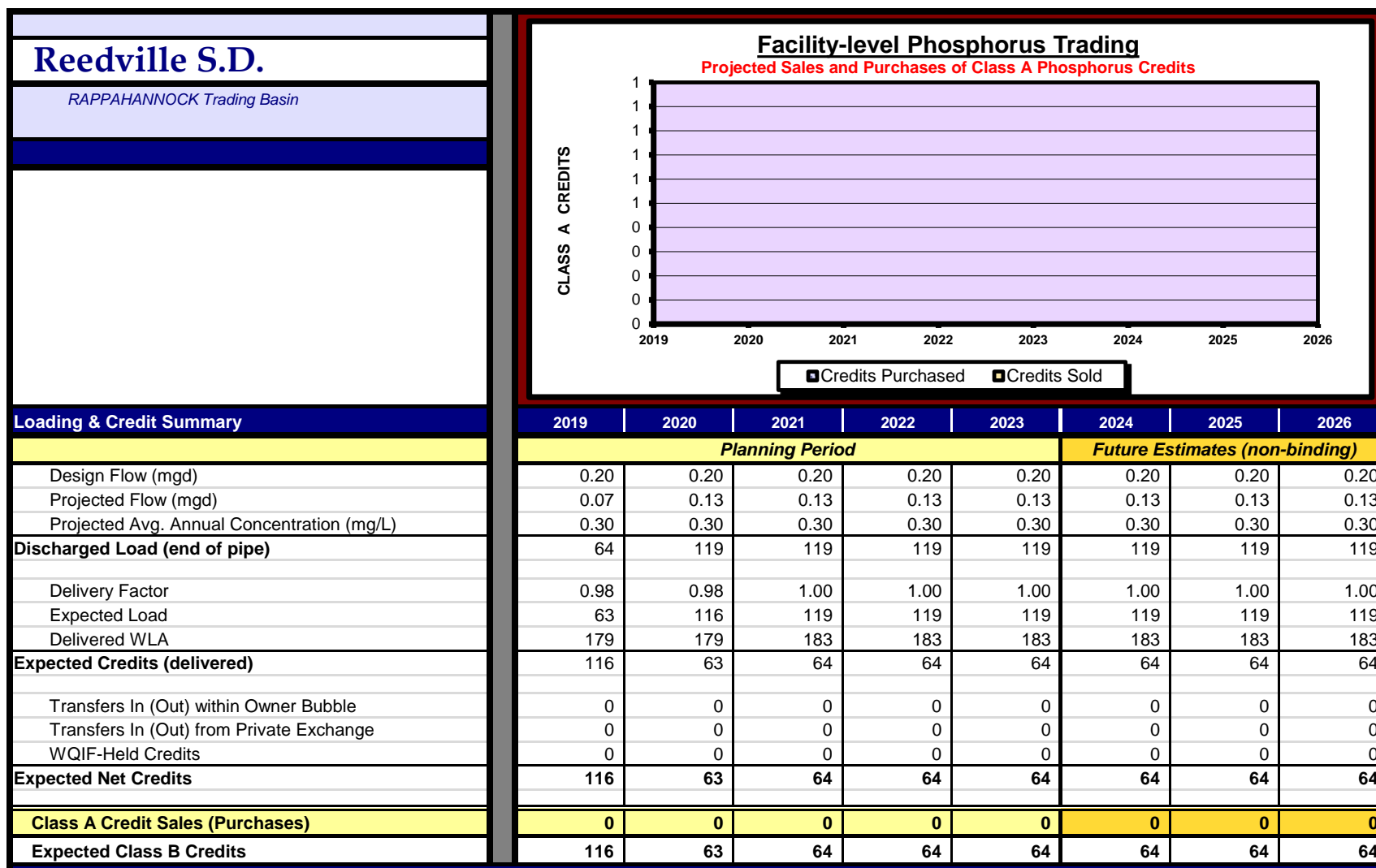
RAPPAHANNOCK Trading Basin

### Facility-level Nitrogen Trading

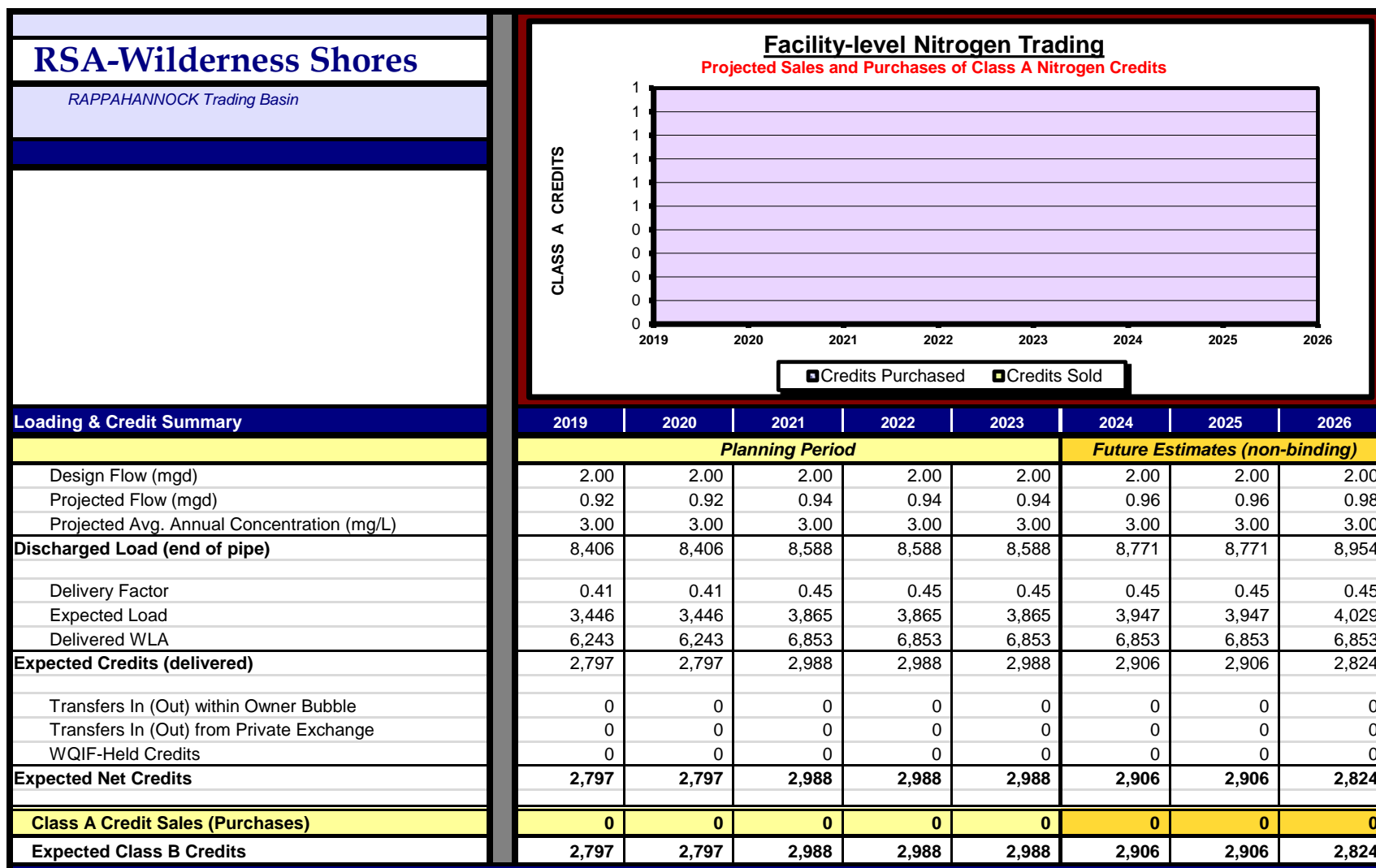
Projected Sales and Purchases of Class A Nitrogen Credits

Loading & Credit Summary								
	2019	2020	2021	2022	2023	2024	2025	2026
	Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Projected Flow (mgd)	0.07	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Projected Avg. Annual Concentration (mg/L)	4.00	6.10	6.10	6.10	6.10	6.10	6.10	6.10
<b>Discharged Load (end of pipe)</b>	853	2,415	2,415	2,415	2,415	2,415	2,415	2,415
Delivery Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load	853	2,415	2,415	2,415	2,415	2,415	2,415	2,415
Delivered WLA	2,436	2,436	2,436	2,436	2,436	2,436	2,436	2,436
<b>Expected Credits (delivered)</b>	1,583	21	21	21	21	21	21	21
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	1,583	21	21	21	21	21	21	21
<b>Class A Credit Sales (Purchases)</b>	0	0	0	0	0	0	0	0
<b>Expected Class B Credits</b>	1,583	21	21	21	21	21	21	21

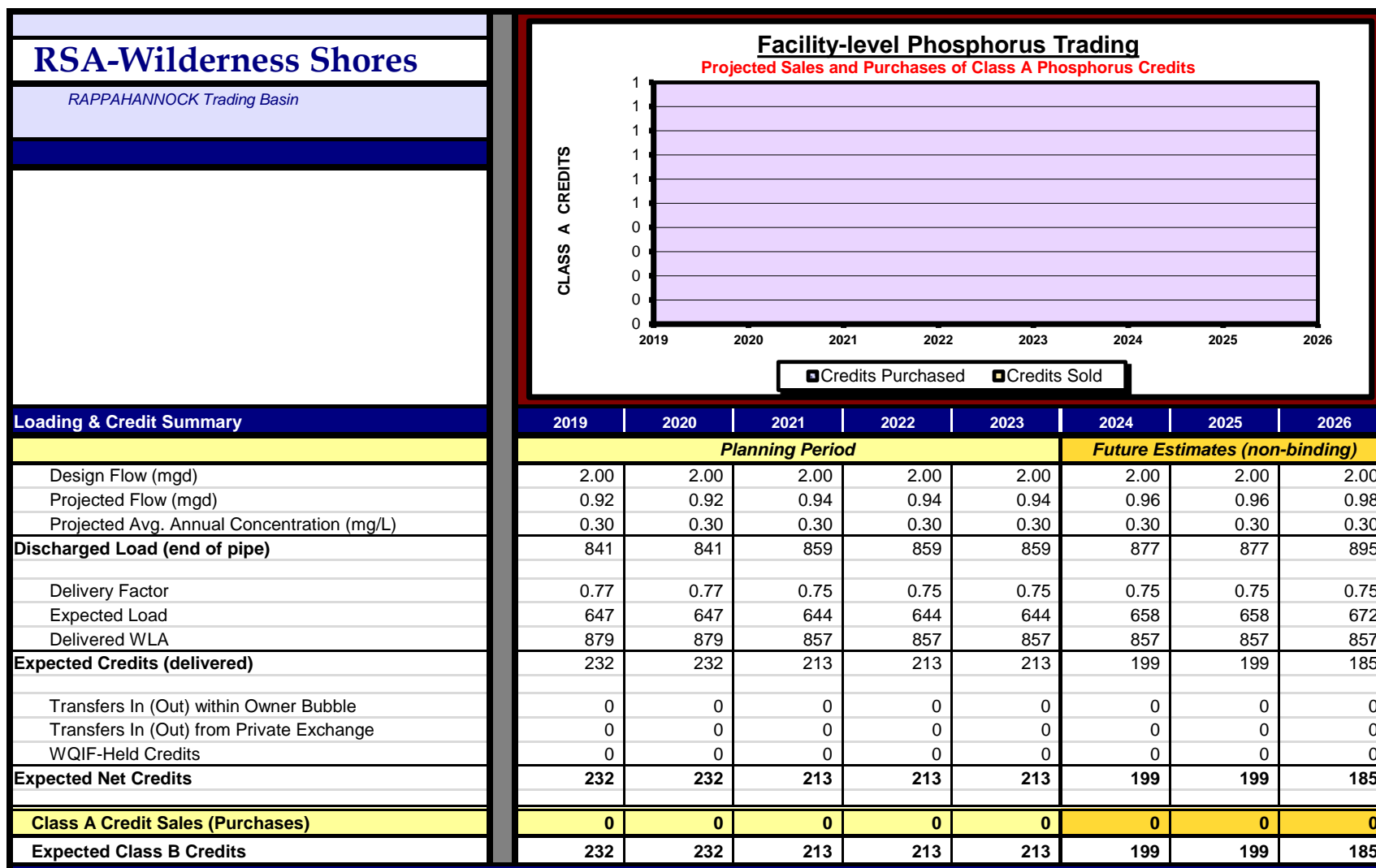
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## Owner Bubble: Spotsylvania County

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

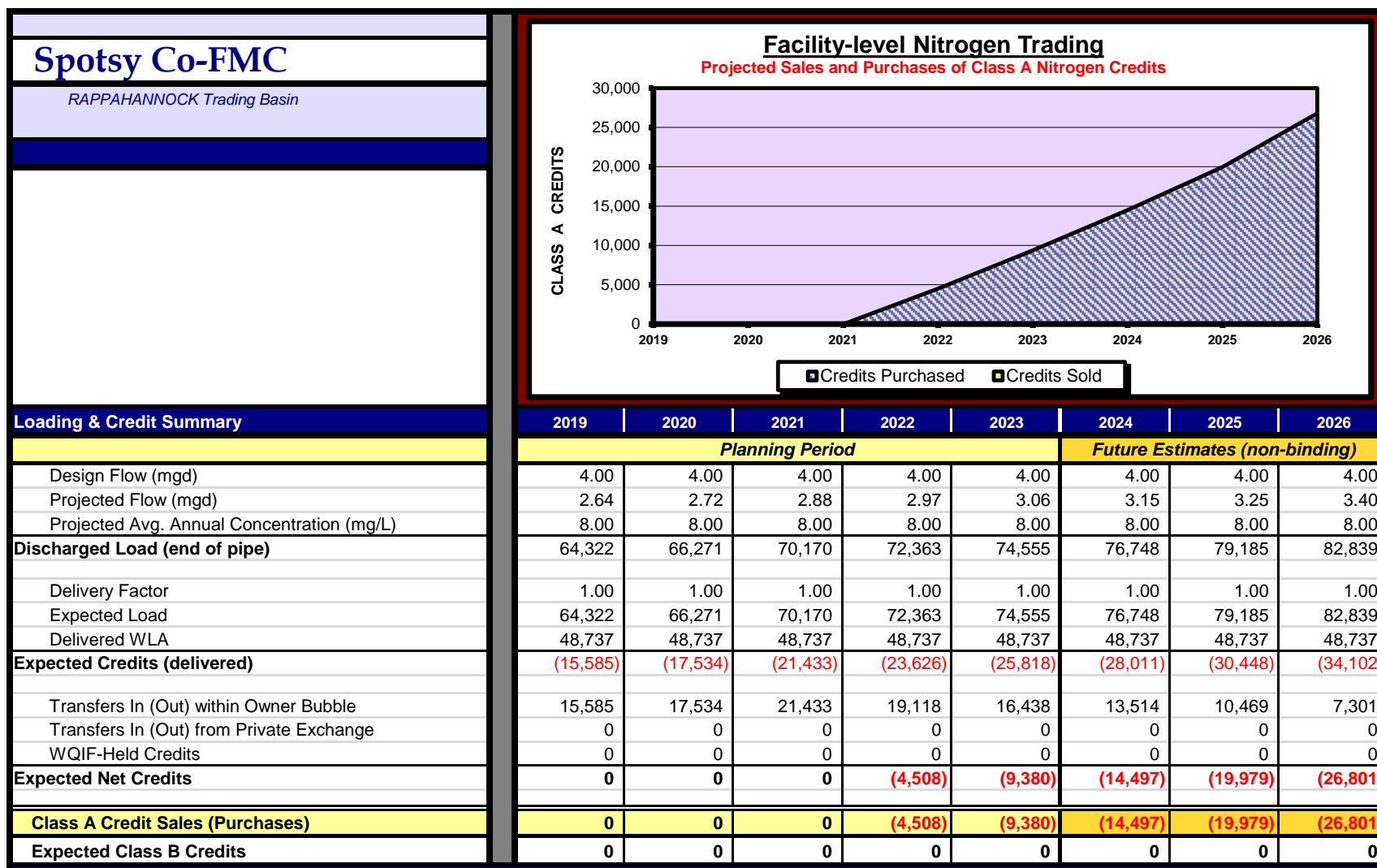
Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

<b>NITROGEN Credits</b>		<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
FMC		15,585	17,534	21,433	19,118	16,438	13,514	10,469	7,301
Massaponax		(15,585)	(17,534)	(21,433)	(19,118)	(16,438)	(13,514)	(10,469)	(7,301)
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>		-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
FMC		-	-	-	(4,508)	(9,380)	(14,497)	(19,979)	(26,801)
Massaponax		11,695	7,066	487	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>		<b>11,695</b>	<b>7,066</b>	<b>487</b>	<b>(4,508)</b>	<b>(9,380)</b>	<b>(14,497)</b>	<b>(19,979)</b>	<b>(26,801)</b>
<b>Class A Sales (Purchases)</b>		<b>5,800</b>	<b>5,000</b>	<b>0</b>	<b>(4,508)</b>	<b>(9,380)</b>	<b>(14,497)</b>	<b>(19,979)</b>	<b>(26,801)</b>
<i>Expected Class B Credits</i>		<i>5,895</i>	<i>2,066</i>	<i>487</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>WQIF-Held Credits</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>

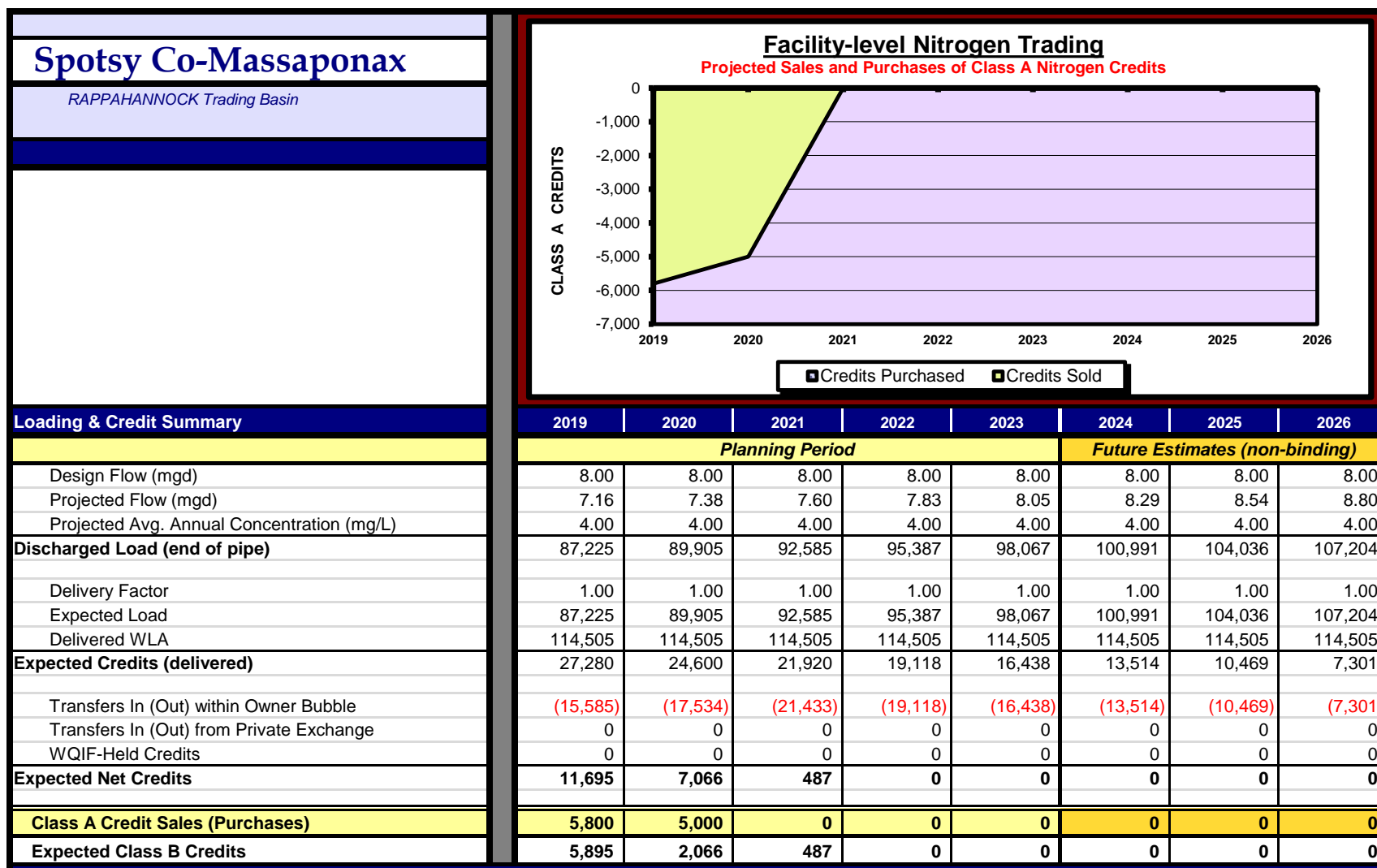
<b>PHOSPHORUS Credits</b>		<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
FMC		-	-	-	-	-	-	-	-
Massaponax		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>		-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
FMC		1,243	1,170	1,024	941	859	777	686	549
Massaponax		1,863	1,662	1,461	1,251	1,050	831	602	365
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>		<b>3,106</b>	<b>2,832</b>	<b>2,485</b>	<b>2,192</b>	<b>1,909</b>	<b>1,608</b>	<b>1,288</b>	<b>914</b>
<b>Class A Sales (Purchases)</b>		<b>1,550</b>	<b>1,750</b>	<b>1,500</b>	<b>1,225</b>	<b>955</b>	<b>805</b>	<b>645</b>	<b>455</b>
<i>Expected Class B Credits</i>		<i>1,556</i>	<i>1,082</i>	<i>985</i>	<i>967</i>	<i>954</i>	<i>803</i>	<i>643</i>	<i>459</i>
<i>WQIF-Held Credits</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>



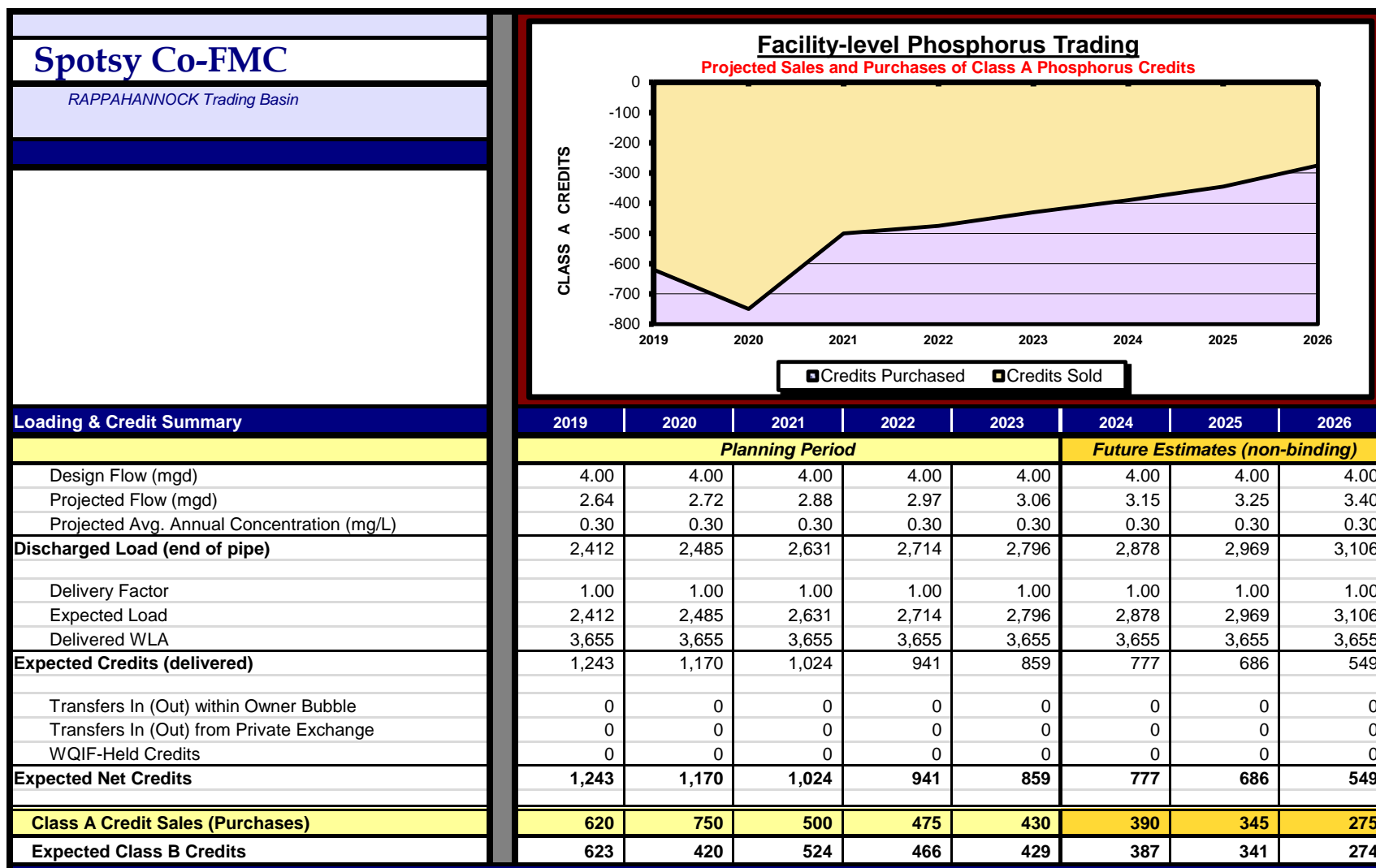
## NITROGEN FACILITY SUMMARY



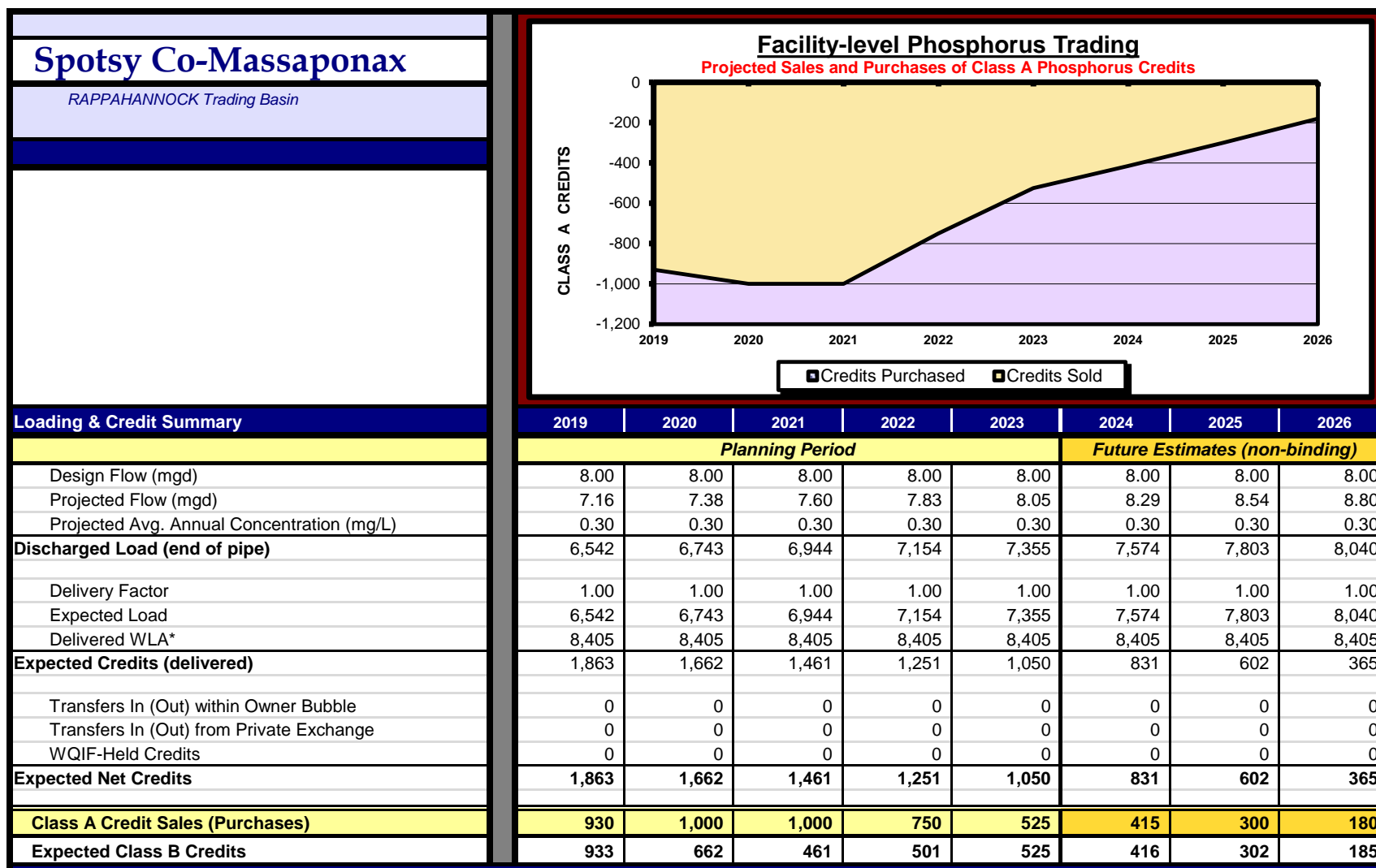
## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

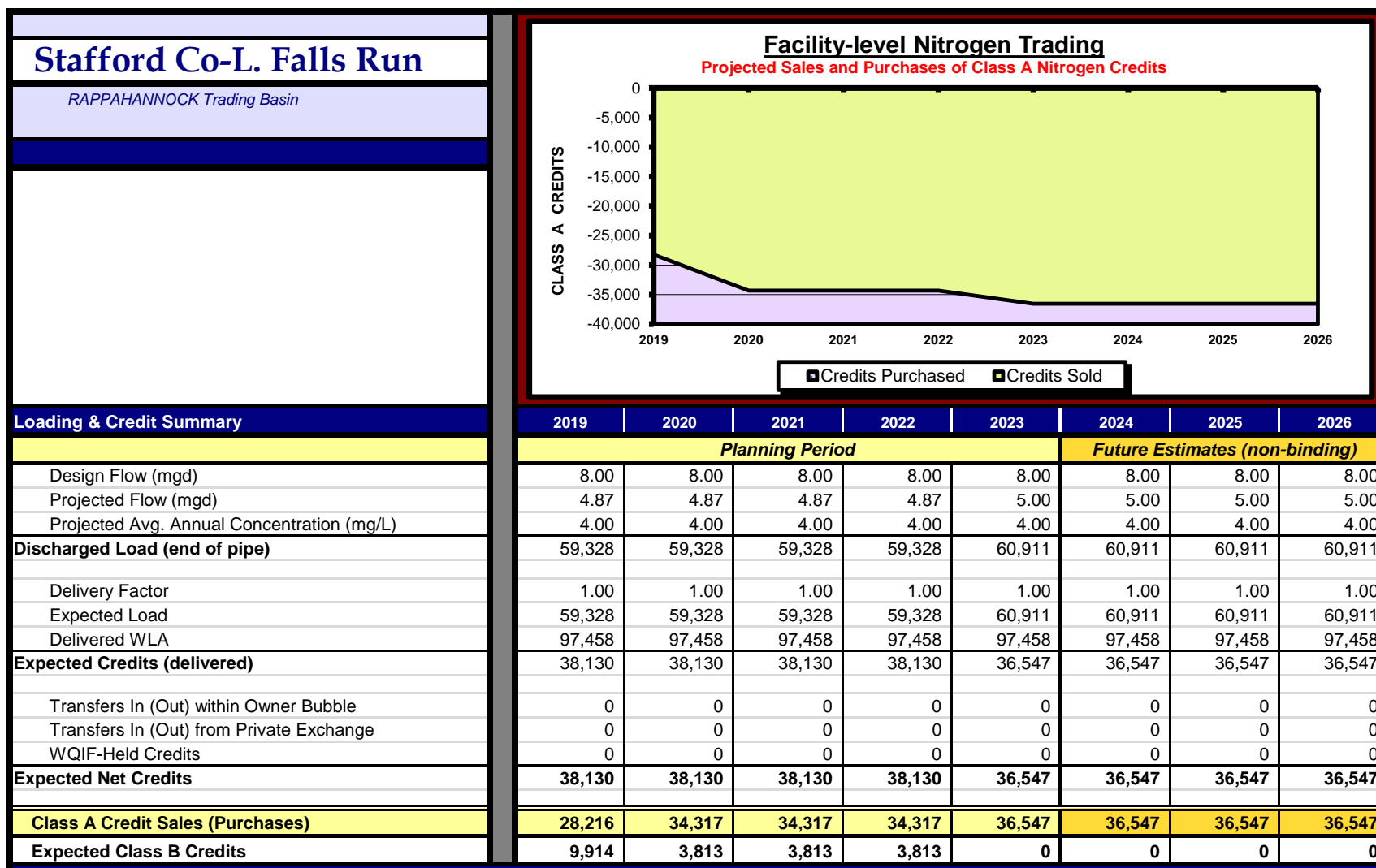


## PHOSPHORUS FACILITY SUMMARY

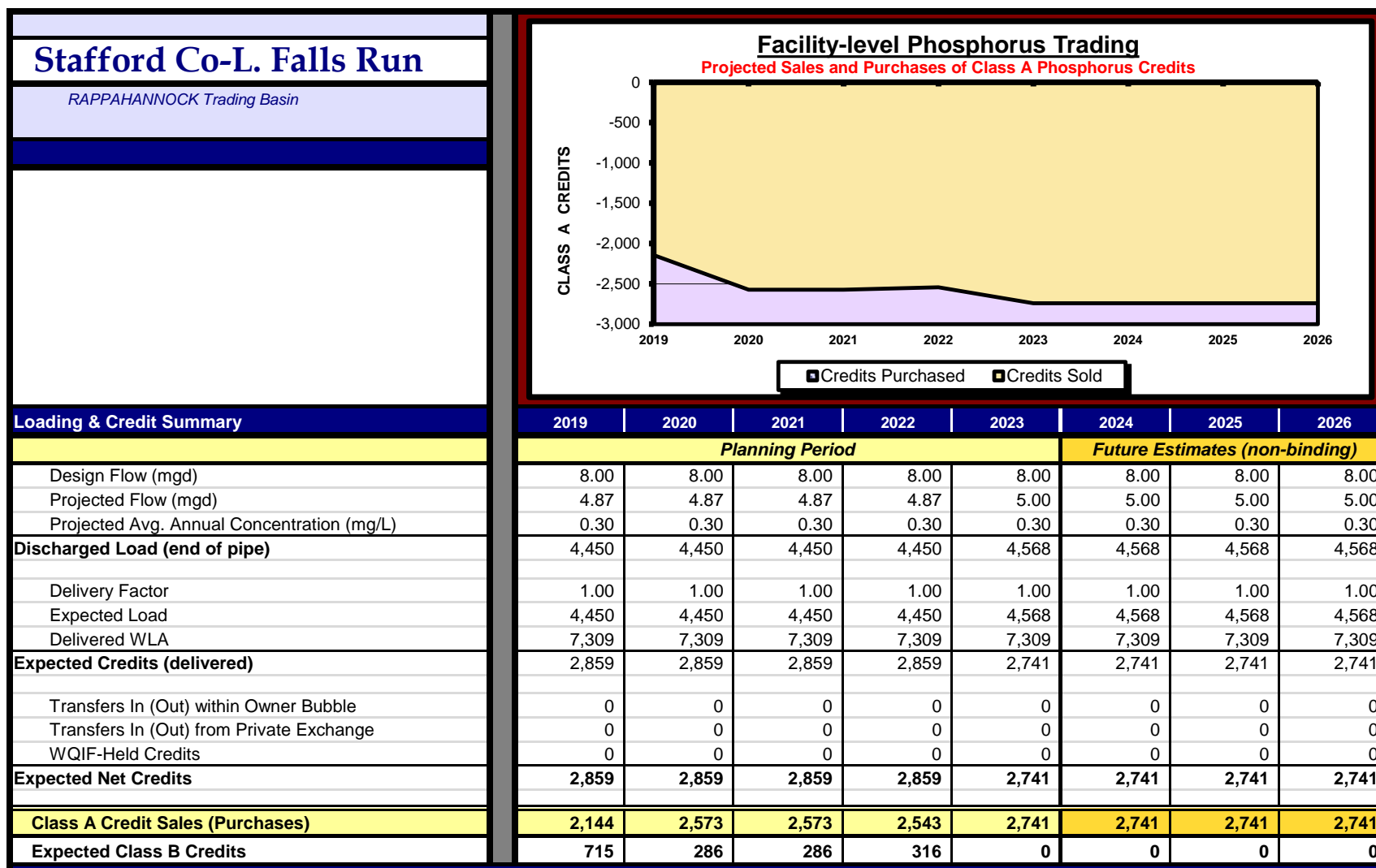


\* Reflects allocation transfer to Rush River WWTP of 183 discharged pounds of TP

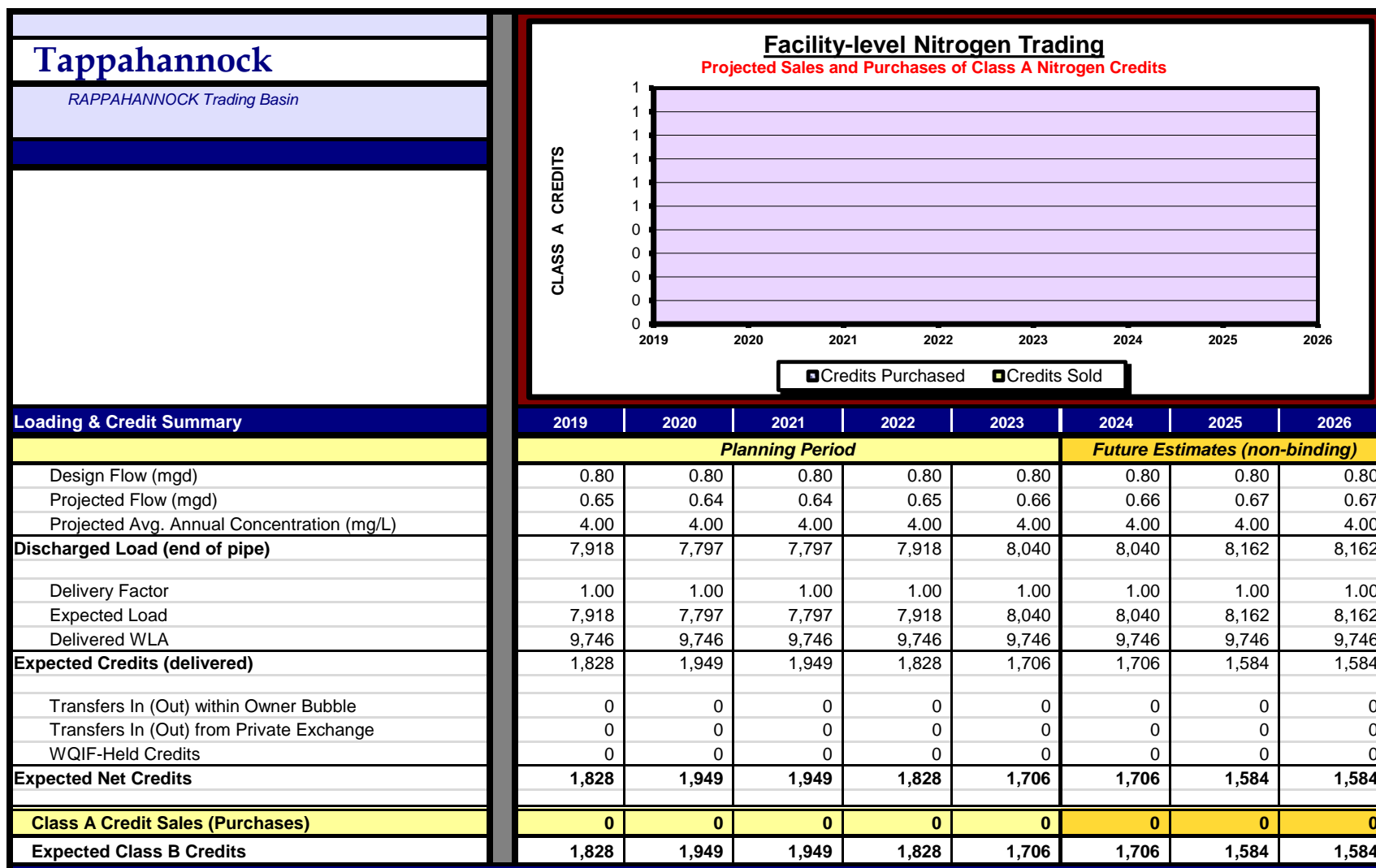
## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

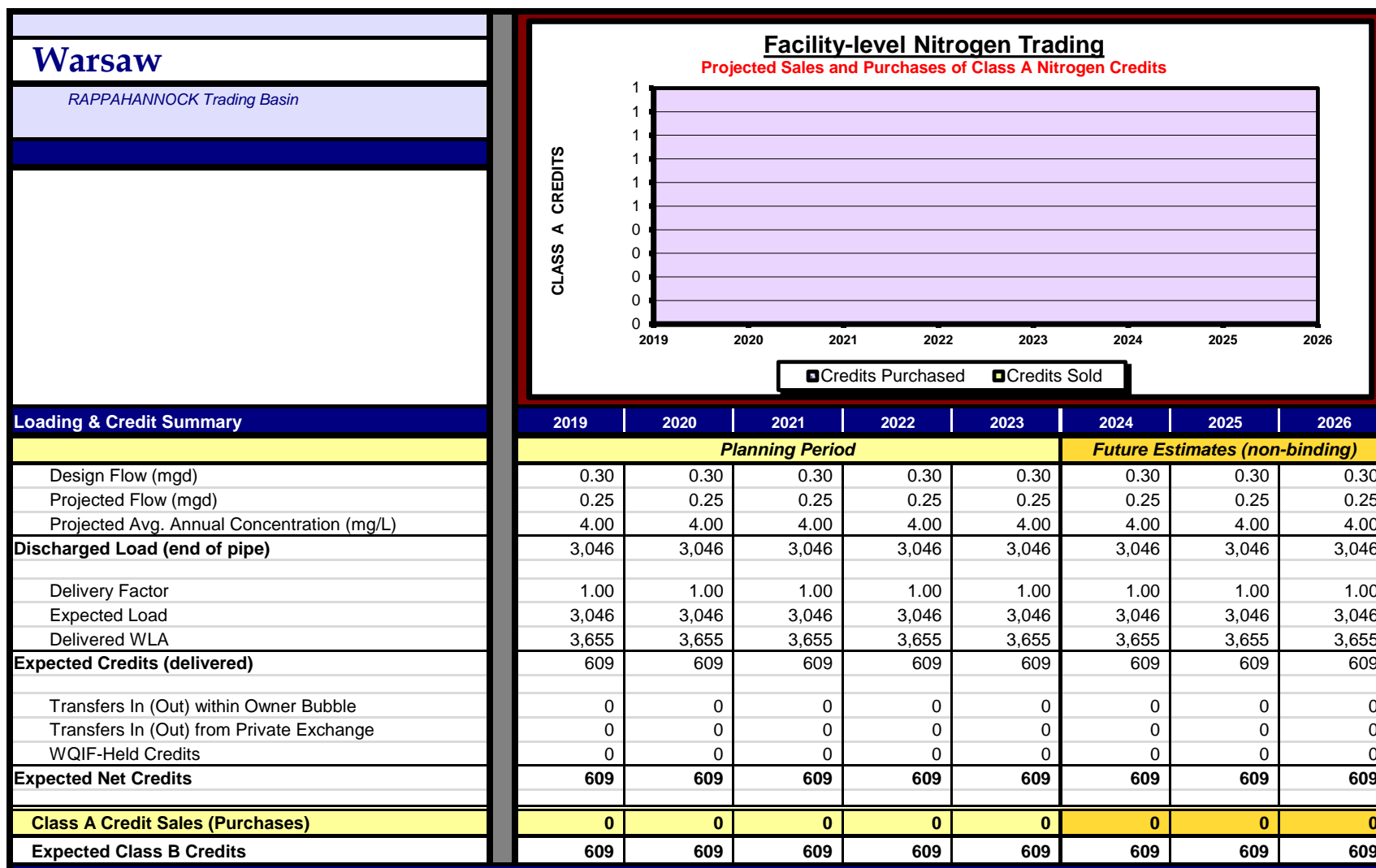


## PHOSPHORUS FACILITY SUMMARY

<div>Tappahannock</div> <div>RAPPAHANNOCK Trading Basin</div>		<div> <div>Facility-level Phosphorus Trading</div> <div>Projected Sales and Purchases of Class A Phosphorus Credits</div> </div>							
Loading & Credit Summary		2019	2020	2021	2022	2023	2024	2025	2026
		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Projected Flow (mgd)		0.65	0.64	0.64	0.65	0.66	0.66	0.67	0.67
Projected Avg. Annual Concentration (mg/L)		0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Discharged Load (end of pipe)		594	585	585	594	603	603	612	612
Delivery Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load		594	585	585	594	603	603	612	612
Delivered WLA		731	731	731	731	731	731	731	731
Expected Credits (delivered)		137	146	146	137	128	128	119	119
Transfers In (Out) within Owner Bubble		0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		137	146	146	137	128	128	119	119
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		137	146	146	137	128	128	119	119



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

## Warsaw

RAPPAHANNOCK Trading Basin

**Facility-level Phosphorus Trading**  
Projected Sales and Purchases of Class A Phosphorus Credits

Year	Credits Purchased	Credits Sold
2019	0	228
2020	0	228
2021	0	274
2022	0	274
2023	0	274
2024	0	46
2025	0	46
2026	0	46

Loading & Credit Summary								
	2019	2020	2021	2022	2023	2024	2025	2026
<b>Planning Period</b>								
Design Flow (mgd)	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Projected Flow (mgd)	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Projected Avg. Annual Concentration (mg/L)	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
<b>Discharged Load (end of pipe)</b>	228	228	228	228	228	228	228	228
Delivery Factor	0.99	0.99	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load	226	226	228	228	228	228	228	228
Delivered WLA	271	271	274	274	274	274	274	274
<b>Expected Credits (delivered)</b>	45	45	46	46	46	46	46	46
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	45	45	46	46	46	46	46	46
<b>Class A Credit Sales (Purchases)</b>	0	0	0	0	0	0	0	0
<b>Expected Class B Credits</b>	45	45	46	46	46	46	46	46

## NITROGEN FACILITY SUMMARY

Westmoreland Co-Montross								
RAPPAHANNOCK Trading Basin								
<p><b>Facility-level Nitrogen Trading</b> Projected Sales and Purchases of Class A Nitrogen Credits</p> <p>CLASS A CREDITS</p> <p>2019 2020 2021 2022 2023 2024 2025 2026</p> <p>Credits Purchased Credits Sold</p>								
Loading & Credit Summary								
Design Flow (mgd)	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Projected Flow (mgd)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Projected Avg. Annual Concentration (mg/L)	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
<b>Discharged Load (end of pipe)</b>	731	731	731	731	731	731	731	731
Delivery Factor	0.74	0.74	0.63	0.63	0.63	0.63	0.63	0.63
Expected Load	541	541	460	460	460	460	460	460
Delivered WLA	1,172	1,172	998	998	998	998	998	998
<b>Expected Credits (delivered)</b>	631	631	538	538	538	538	538	538
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	631	631	538	538	538	538	538	538
<b>Class A Credit Sales (Purchases)</b>	0	0	0	0	0	0	0	0
<b>Expected Class B Credits</b>	631	631	538	538	538	538	538	538

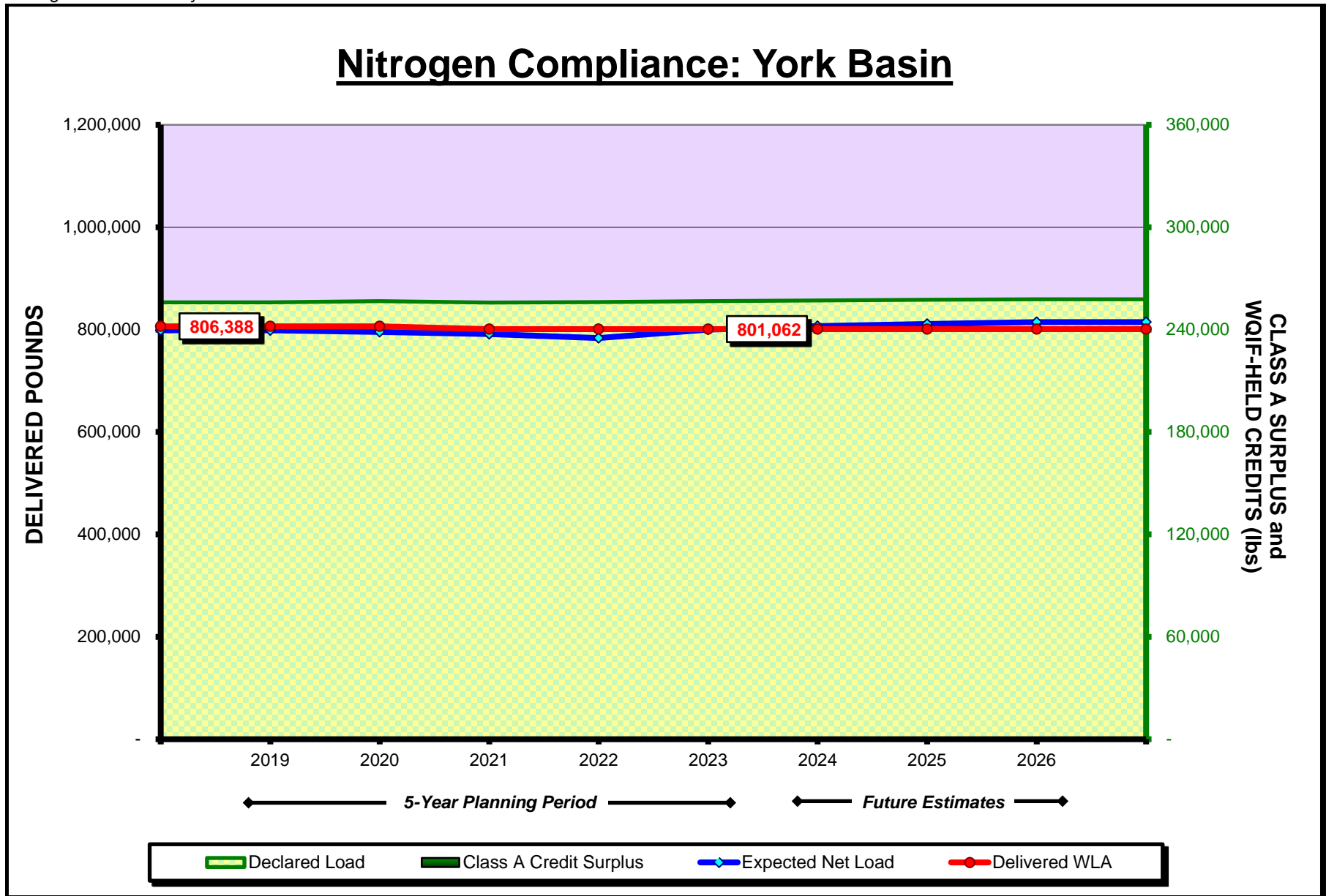
## PHOSPHORUS FACILITY SUMMARY

[illegible]

SECTION 4

# York River Basin Exchange Compliance Plan





## YORK Basin: Nitrogen Credit Ledger

[illegible]

**\* For this Compliance Year, 65% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## YORK Basin: Nitrogen Credit Ledger

[illegible]

**\* For this Compliance Year, 68% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**



## YORK Basin: Nitrogen Credit Ledger

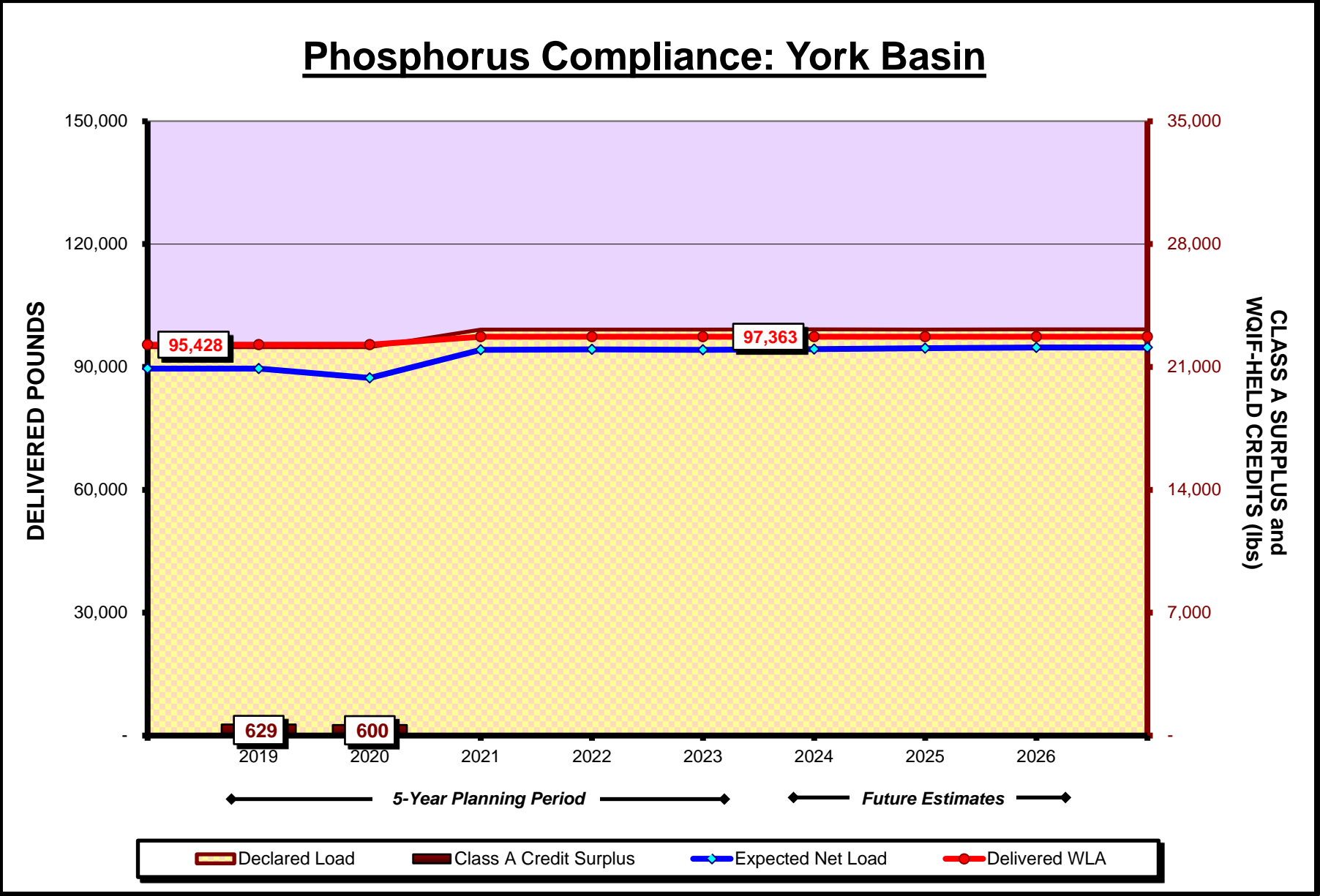
[illegible]

**\* For this Compliance Year, 71% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**













[illegible]

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**





# York River Basin

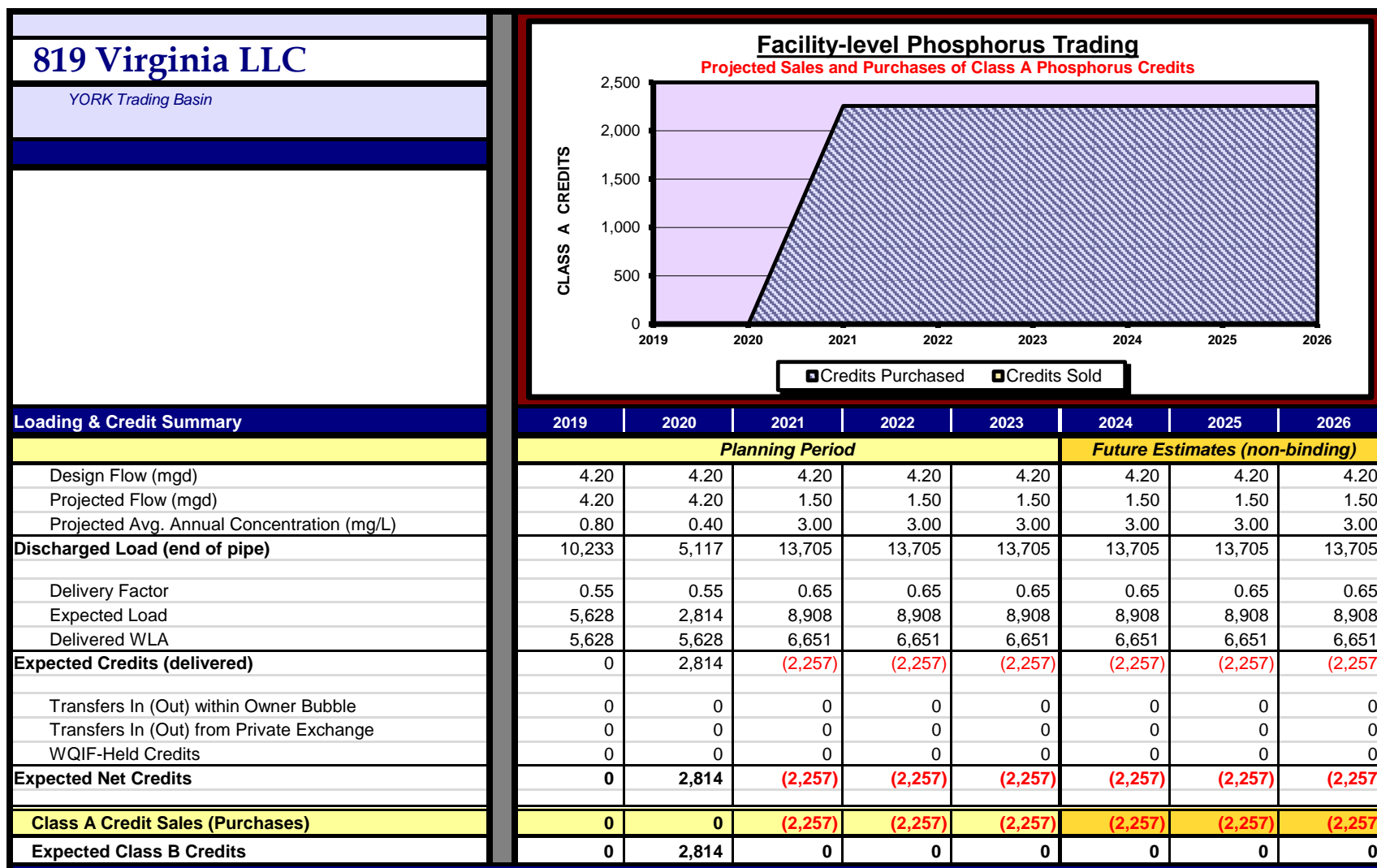
Supplemental Information for Individual Facilities



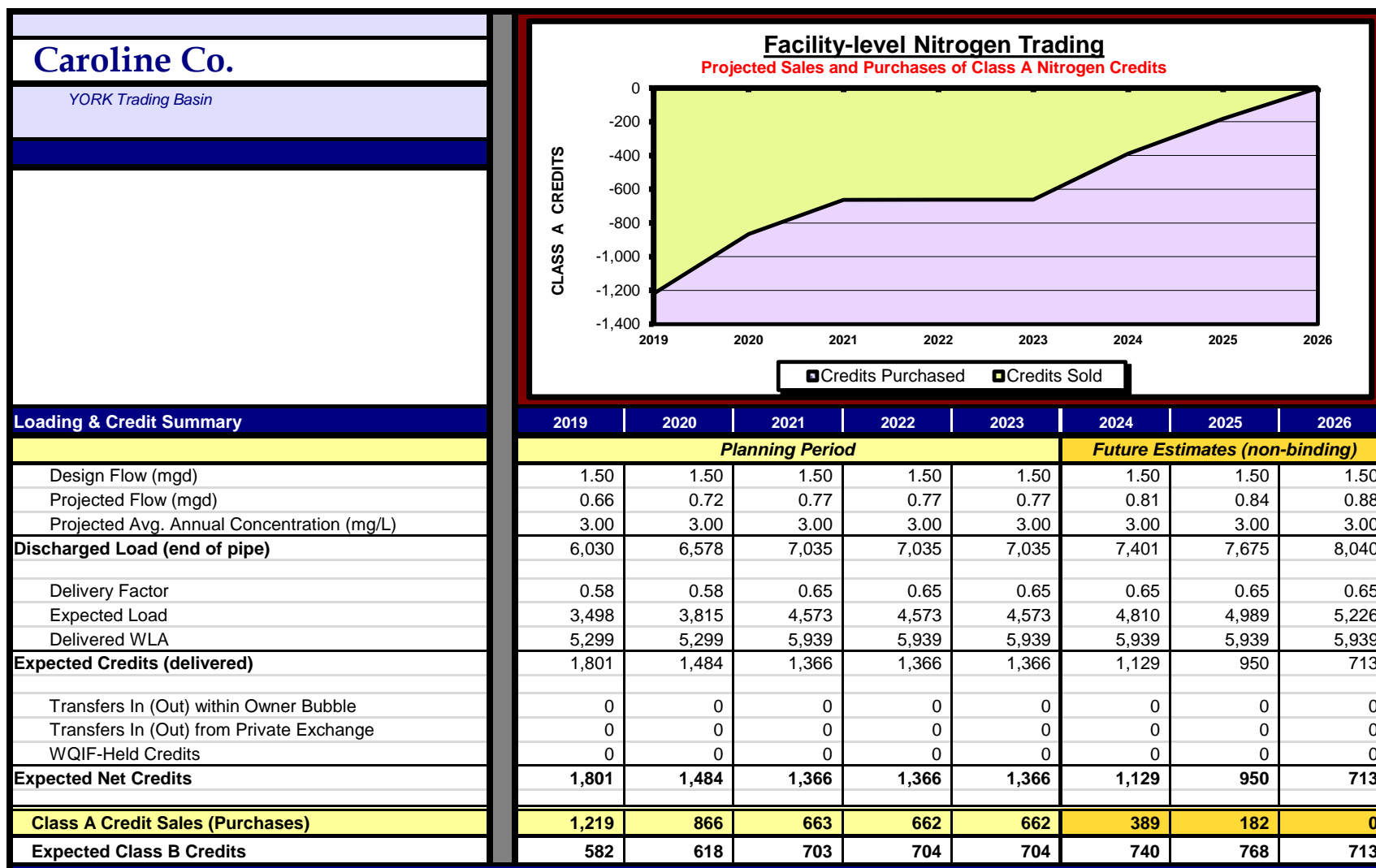
## NITROGEN FACILITY SUMMARY

<div>819 Virginia LLC</div> <div>YORK Trading Basin</div>		<div>Facility-level Nitrogen Trading</div> <div>Projected Sales and Purchases of Class A Nitrogen Credits</div>							
Loading & Credit Summary		2019	2020	2021	2022	2023	2024	2025	2026
		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		4.20	4.20	4.20	4.20	4.20	4.20	4.20	4.20
Projected Flow (mgd)		4.20	4.20	1.50	1.50	1.50	1.50	1.50	1.50
Projected Avg. Annual Concentration (mg/L)		3.70	2.50	8.00	8.00	8.00	8.00	8.00	8.00
Discharged Load (end of pipe)		47,328	31,978	36,547	36,547	36,547	36,547	36,547	36,547
Delivery Factor		0.51	0.51	0.50	0.50	0.50	0.50	0.50	0.50
Expected Load		24,137	16,309	18,273	18,273	18,273	18,273	18,273	18,273
Delivered WLA		24,137	24,137	23,664	23,664	23,664	23,664	23,664	23,664
Expected Credits (delivered)		0	7,828	5,391	5,391	5,391	5,391	5,391	5,391
Transfers In (Out) within Owner Bubble		0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		0	7,828	5,391	5,391	5,391	5,391	5,391	5,391
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		0	7,828	5,391	5,391	5,391	5,391	5,391	5,391

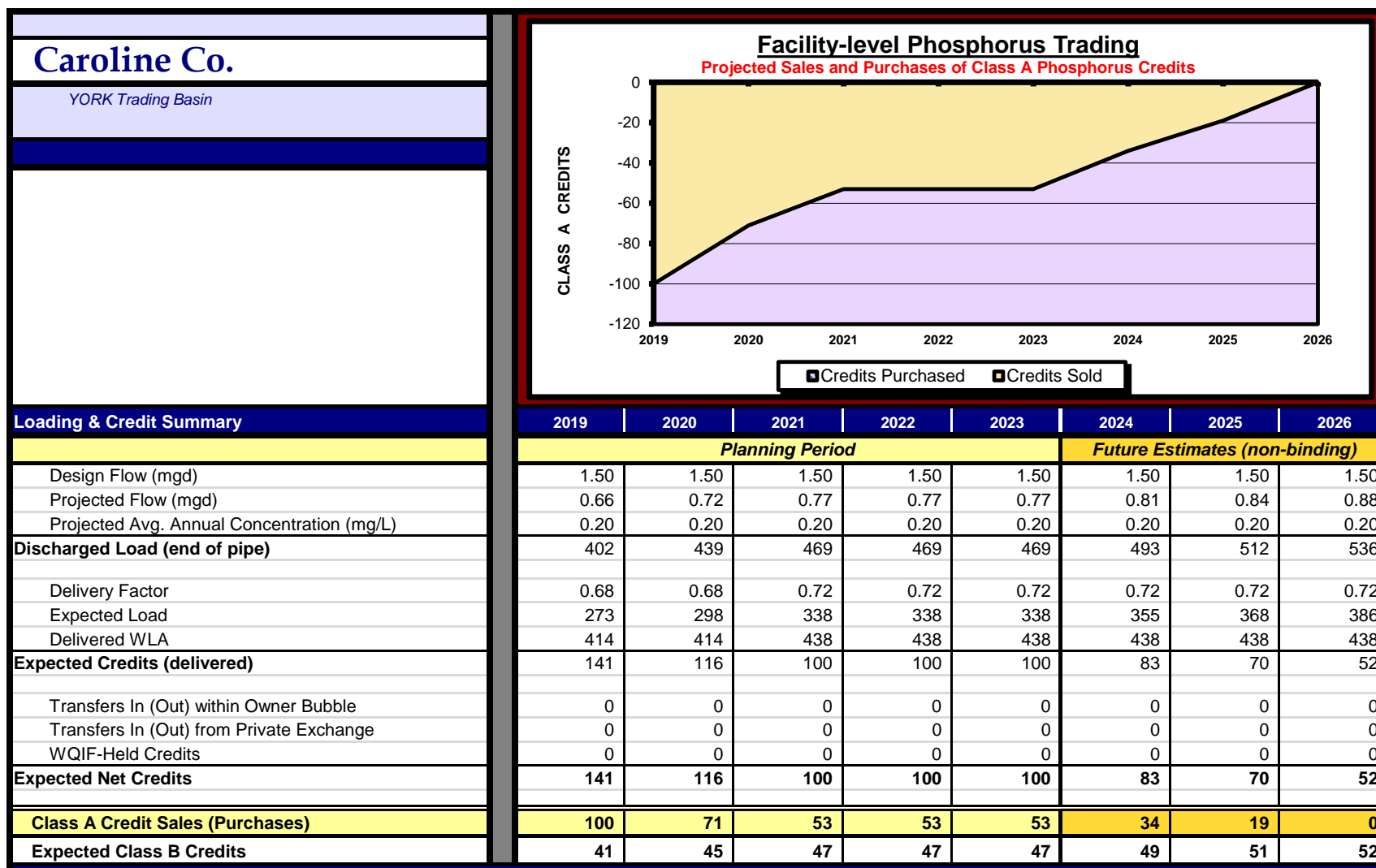
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## Owner Bubble: Hanover County

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

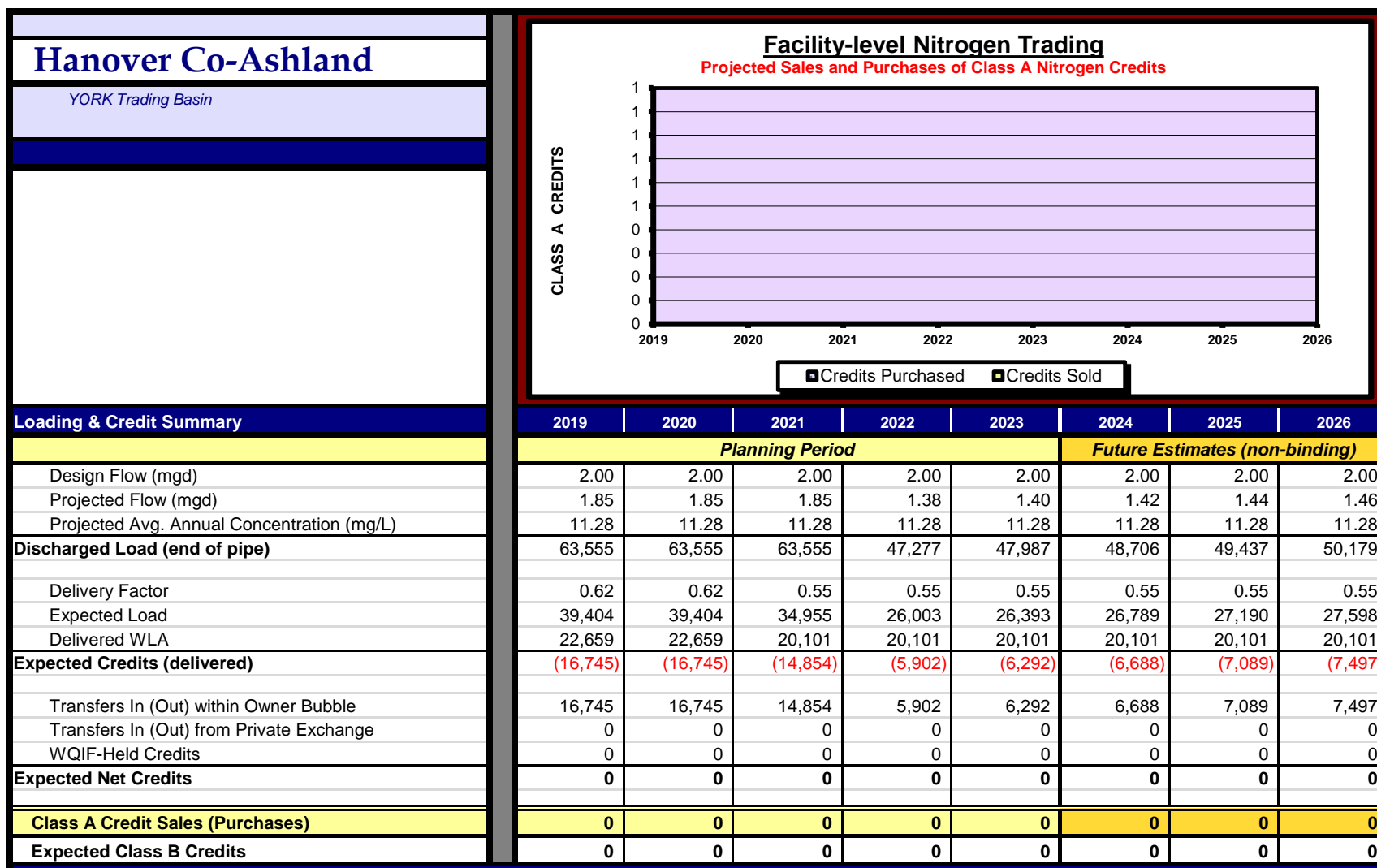
The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

<b>NITROGEN Credits</b>	<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Ashland	16,745	16,745	14,854	5,902	6,292	6,688	7,089	7,497
Doswell	5,954	6,310	9,593	666	813	963	1,114	1,268
Totopotomoy	(22,699)	(23,055)	(24,447)	(6,568)	(7,105)	(7,651)	(8,203)	(8,765)
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>	-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Ashland	-	-	-	-	-	-	-	-
Doswell	-	-	-	-	-	-	-	-
Totopotomoy	29,234	27,818	24,794	33,244	14,896	10,160	8,560	6,950
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
<b>Expected Credits</b>	<b>29,234</b>	<b>27,818</b>	<b>24,794</b>	<b>33,244</b>	<b>14,896</b>	<b>10,160</b>	<b>8,560</b>	<b>6,950</b>
Private Exchanges				(90)	(90)	(90)	(90)	(90)
<b>Expected Net Credits</b>	<b>29,234</b>	<b>27,818</b>	<b>24,794</b>	<b>33,154</b>	<b>14,806</b>	<b>10,070</b>	<b>8,470</b>	<b>6,860</b>
<b>Class A Sales (Purchases)</b>	<b>12,000</b>	<b>10,000</b>	<b>8,000</b>	<b>7,000</b>	<b>5,000</b>	<b>4,000</b>	<b>3,000</b>	<b>3,000</b>
Expected Class B Credits	17,234	17,818	16,794	26,154	9,806	6,070	5,470	3,860
WQIF-Held Credits	47,694	47,694	47,145	47,145	47,145	47,145	47,145	47,145

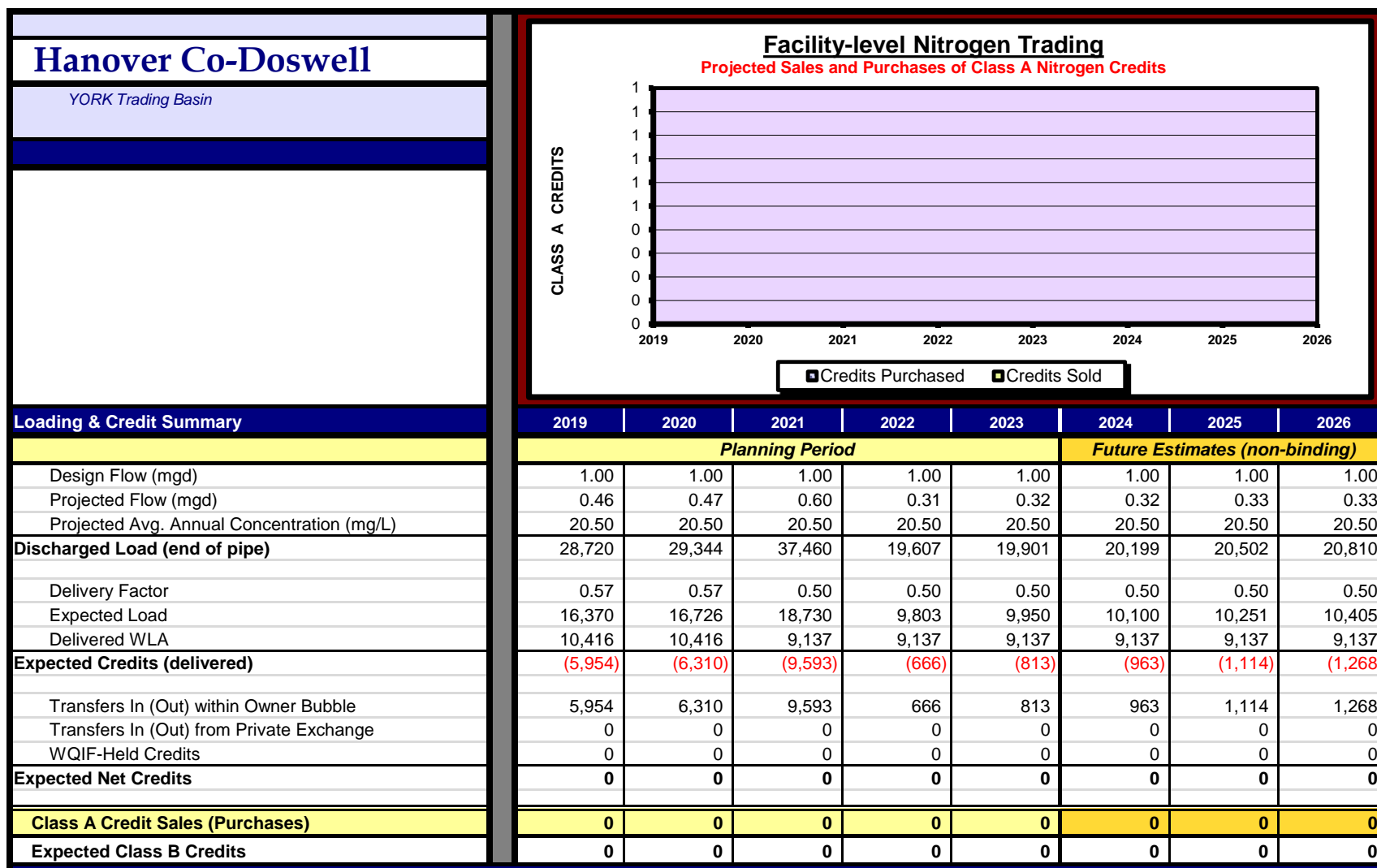
<b>PHOSPHORUS Credits</b>	<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Ashland	3,928	3,928	3,910	2,503	2,565	2,627	2,690	2,754
Doswell	640	668	1,227	265	281	297	313	330
Totopotomoy	(4,568)	(4,596)	(5,137)	(2,768)	(2,846)	(2,924)	(3,003)	(3,084)
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>	-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Ashland	-	-	-	-	-	-	-	-
Doswell	-	-	-	-	-	-	-	-
Totopotomoy	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
<b>Expected Credits</b>	-	-	-	-	-	-	-	-
Private Exchanges	-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>	-	-	-	-	-	-	-	-
<b>Class A Sales (Purchases)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Expected Class B Credits	0	0	0	0	0	0	0	0
WQIF-Held Credits	1,201	1,108	576	2,357	1,169	829	685	539

## NITROGEN FACILITY SUMMARY

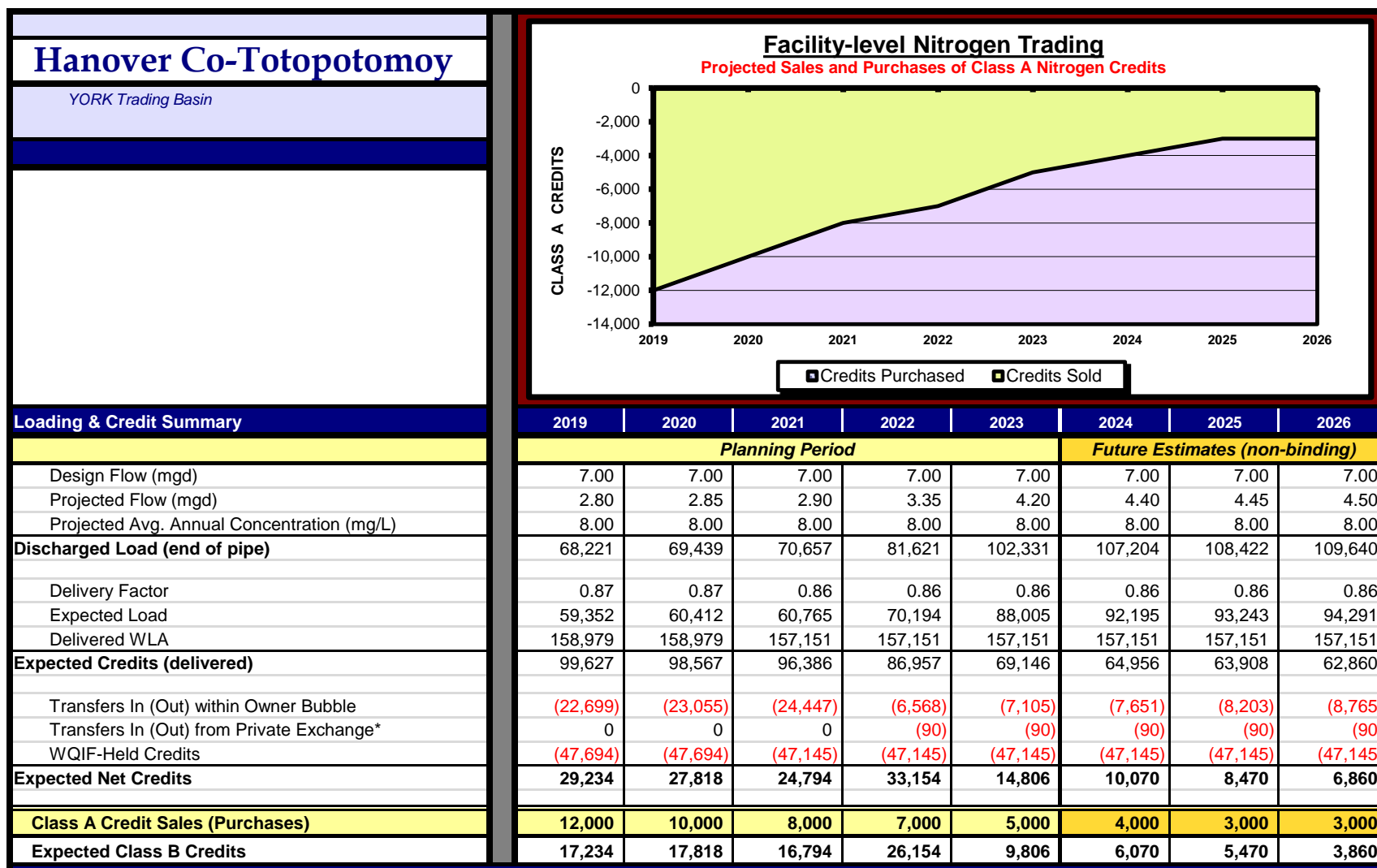




## NITROGEN FACILITY SUMMARY

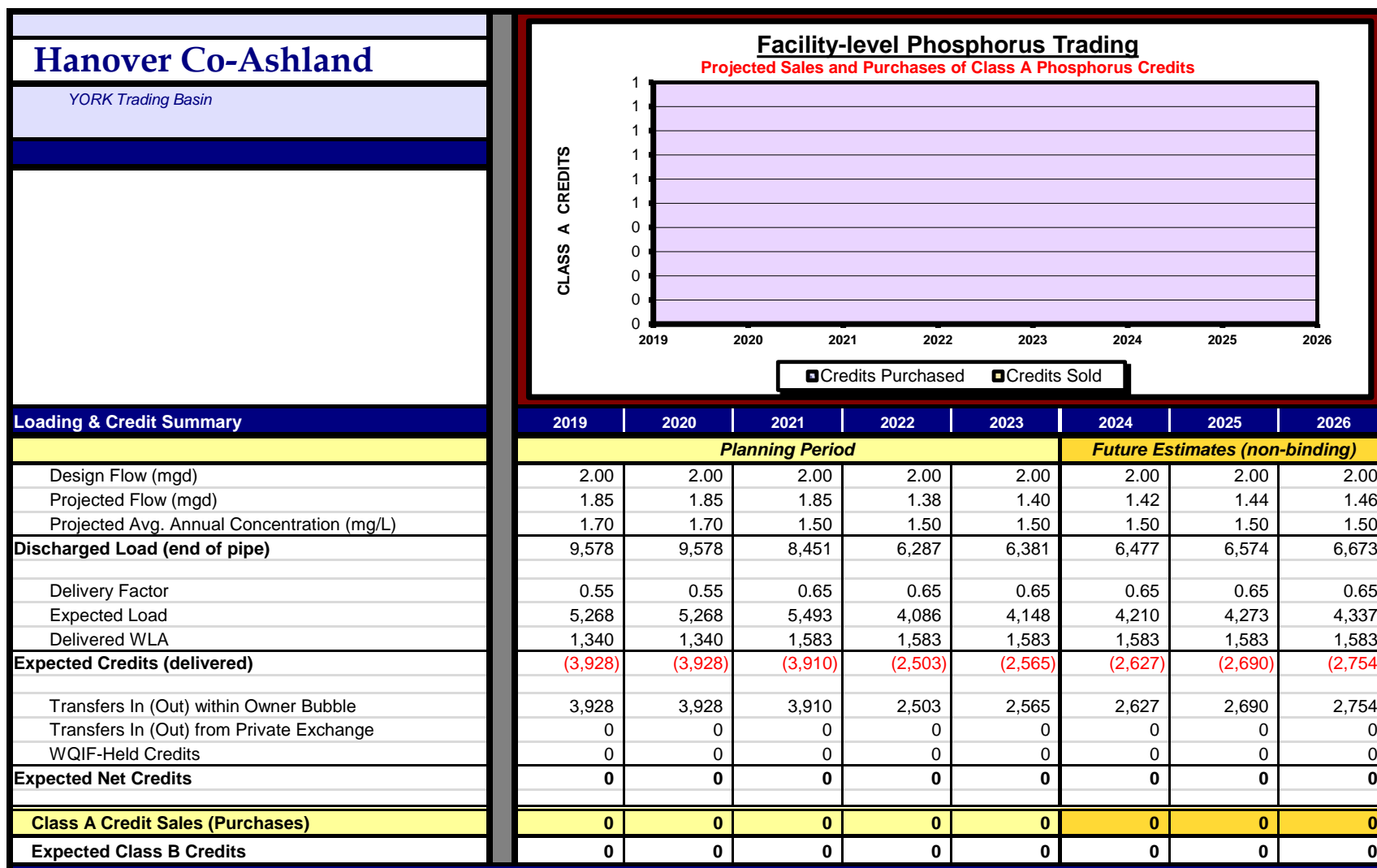


## NITROGEN FACILITY SUMMARY

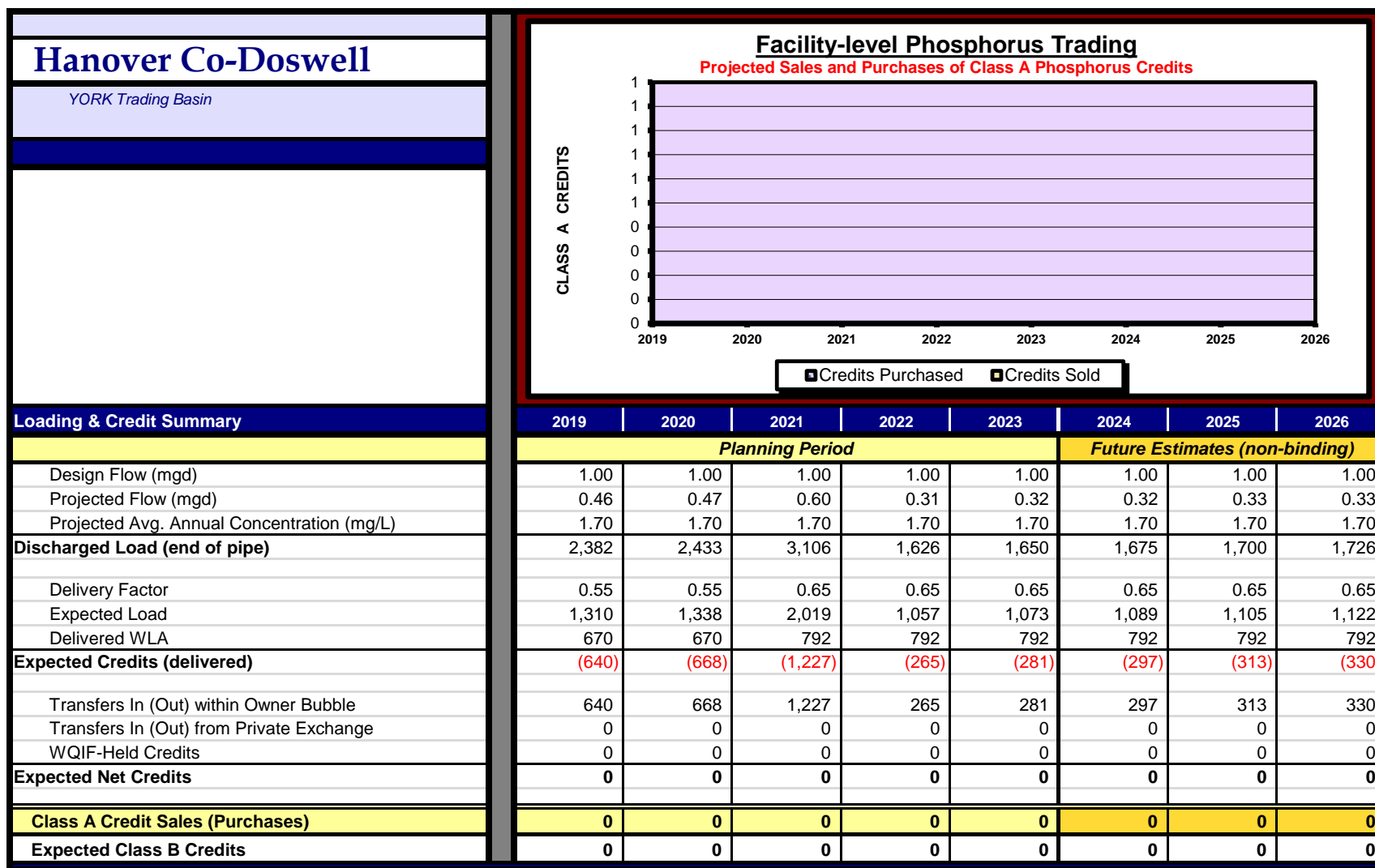


\* Represents private trade with Hanover County to meet MS4 requirements

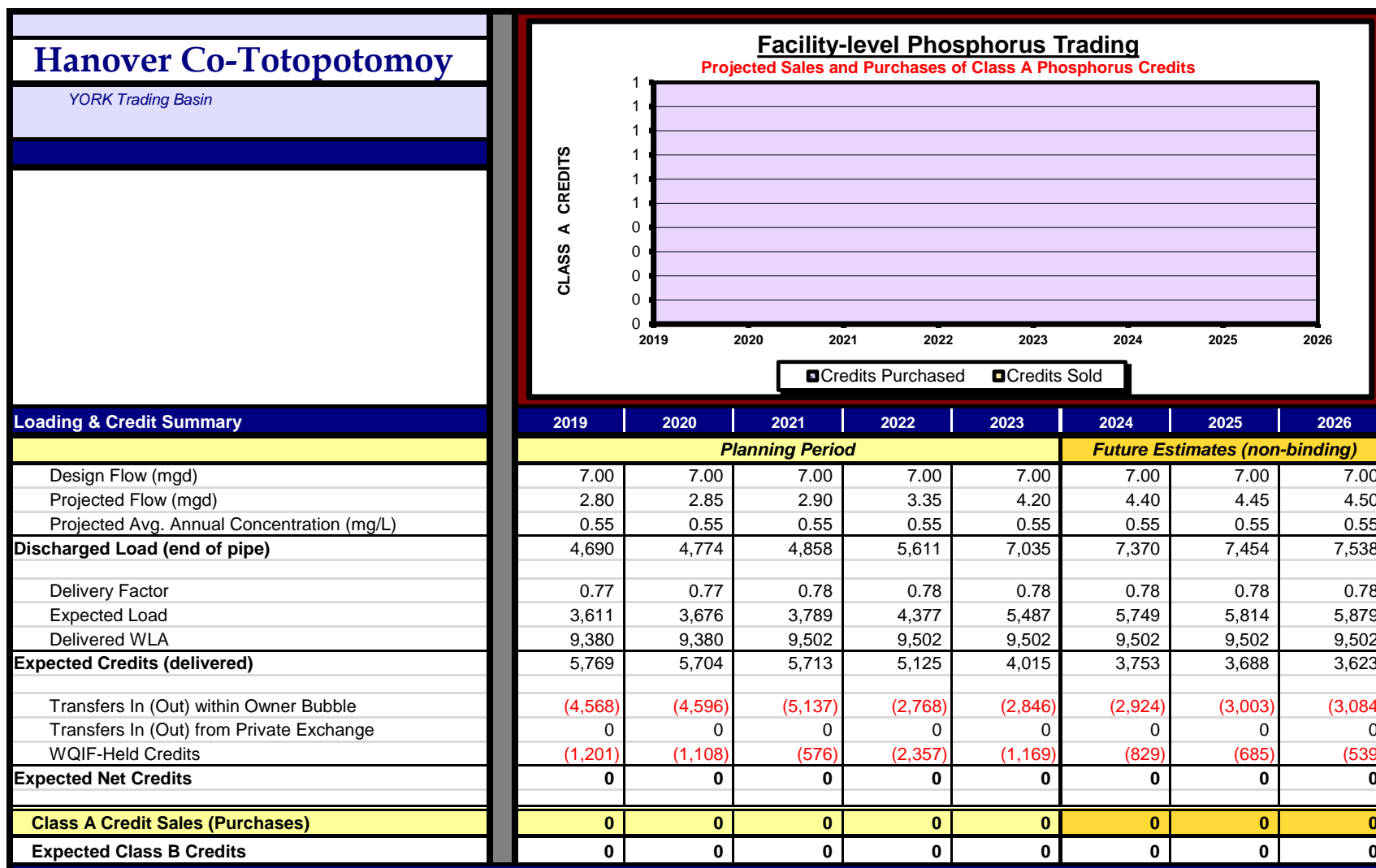
## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## Owner Bubble: Hampton Roads Sanitation District (York)

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

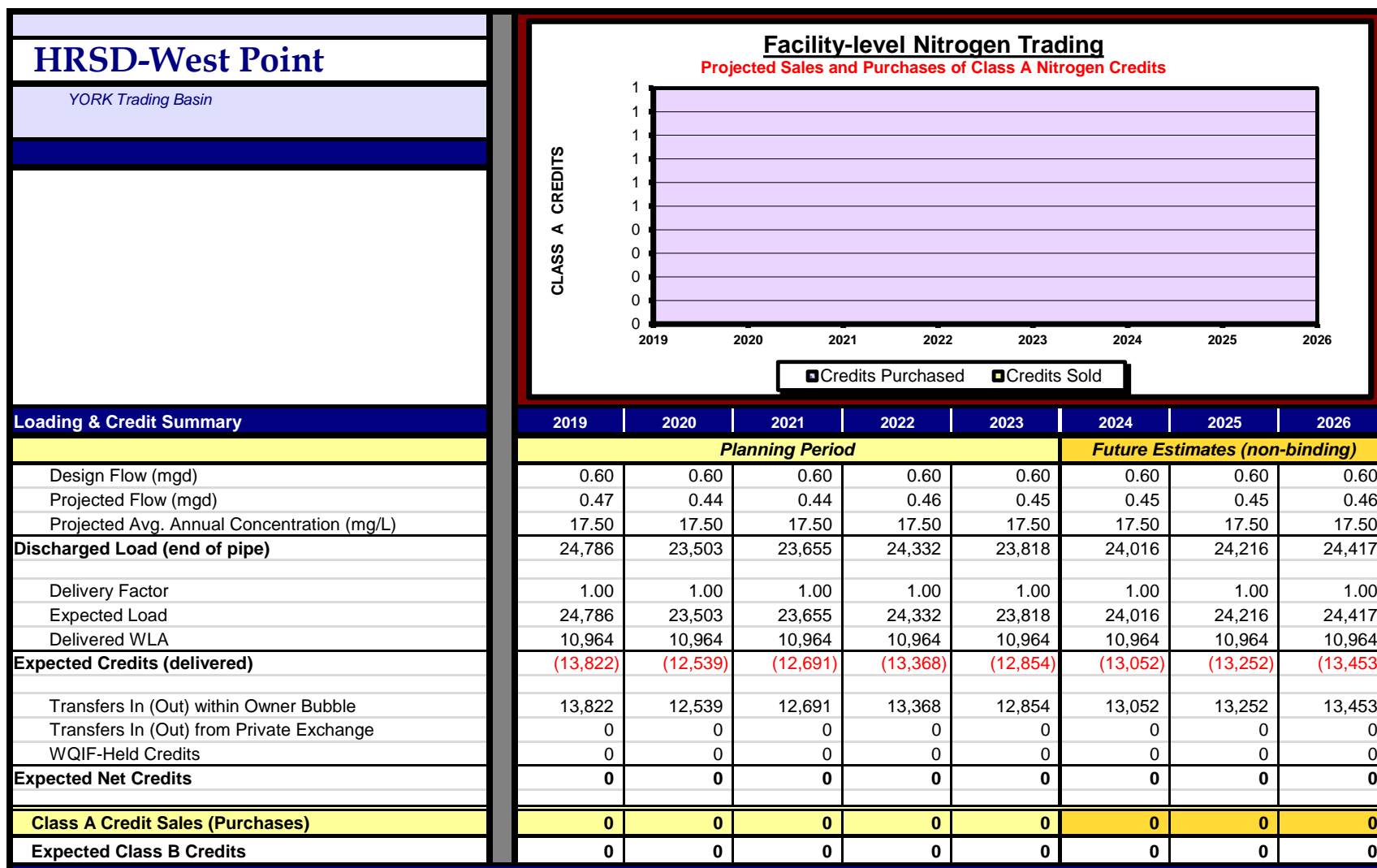
NITROGEN Credits		Exchange 5-year Planning Period					Future Projections		
Credits Transferred within Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
King William	(808)	(798)	(825)	(773)	(763)	(737)	(711)	(684)	
West Point	13,822	12,539	12,691	13,368	12,854	13,052	13,252	13,453	
York	(13,014)	(11,741)	(11,866)	(12,595)	(12,091)	(12,315)	(12,541)	(12,769)	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
TOTAL (must sum to 0)	-	-	-	-	-	-	-	-	
Credits Available outside Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
King William	-	-	-	-	-	-	-	-	
West Point	-	-	-	-	-	-	-	-	
York	23,674	19,211	23,602	23,537	25,028	24,047	23,061	22,071	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
Expected Credits	23,674	19,211	23,602	23,537	25,028	24,047	23,061	22,071	
Private Exchanges	5	5	5	5	5	5	5	5	
Expected Net Credits	23,679	19,216	23,607	23,542	25,033	24,052	23,066	22,076	
Class A Sales (Purchases)	0	0	0	0	0	0	0	0	
Expected Class B Credits	23,679	19,216	23,607	23,542	25,033	24,052	23,066	22,076	
WQIF-Held Credits	0	0	0	0	0	0	0	0	

PHOSPHORUS Credits		Exchange 5-year Planning Period					Future Projections		
Credits Transferred within Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
King William	(144)	(143)	(145)	(141)	(140)	(138)	(136)	(135)	
West Point	3,518	3,298	3,324	3,440	3,352	3,386	3,420	3,455	
York	(3,374)	(3,155)	(3,179)	(3,299)	(3,212)	(3,248)	(3,284)	(3,320)	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
TOTAL (must sum to 0)	-	-	-	-	-	-	-	-	
Credits Available outside Bubble	2019	2020	2021	2022	2023	2024	2025	2026	
King William	-	-	-	-	-	-	-	-	
West Point	-	-	-	-	-	-	-	-	
York	1,065	950	1,189	1,108	1,253	1,172	1,092	1,012	
	-	-	-	-	-	-	-	-	
	-	-	-	-	-	-	-	-	
Expected Credits	1,065	950	1,189	1,108	1,253	1,172	1,092	1,012	
Private Exchanges	-	-	-	-	-	-	-	-	
Expected Net Credits	1,065	950	1,189	1,108	1,253	1,172	1,092	1,012	
Class A Sales (Purchases)	0	0	0	0	0	0	0	0	
Expected Class B Credits	1,065	950	1,189	1,108	1,253	1,172	1,092	1,012	
WQIF-Held Credits	0	0	0	0	0	0	0	0	

## NITROGEN FACILITY SUMMARY

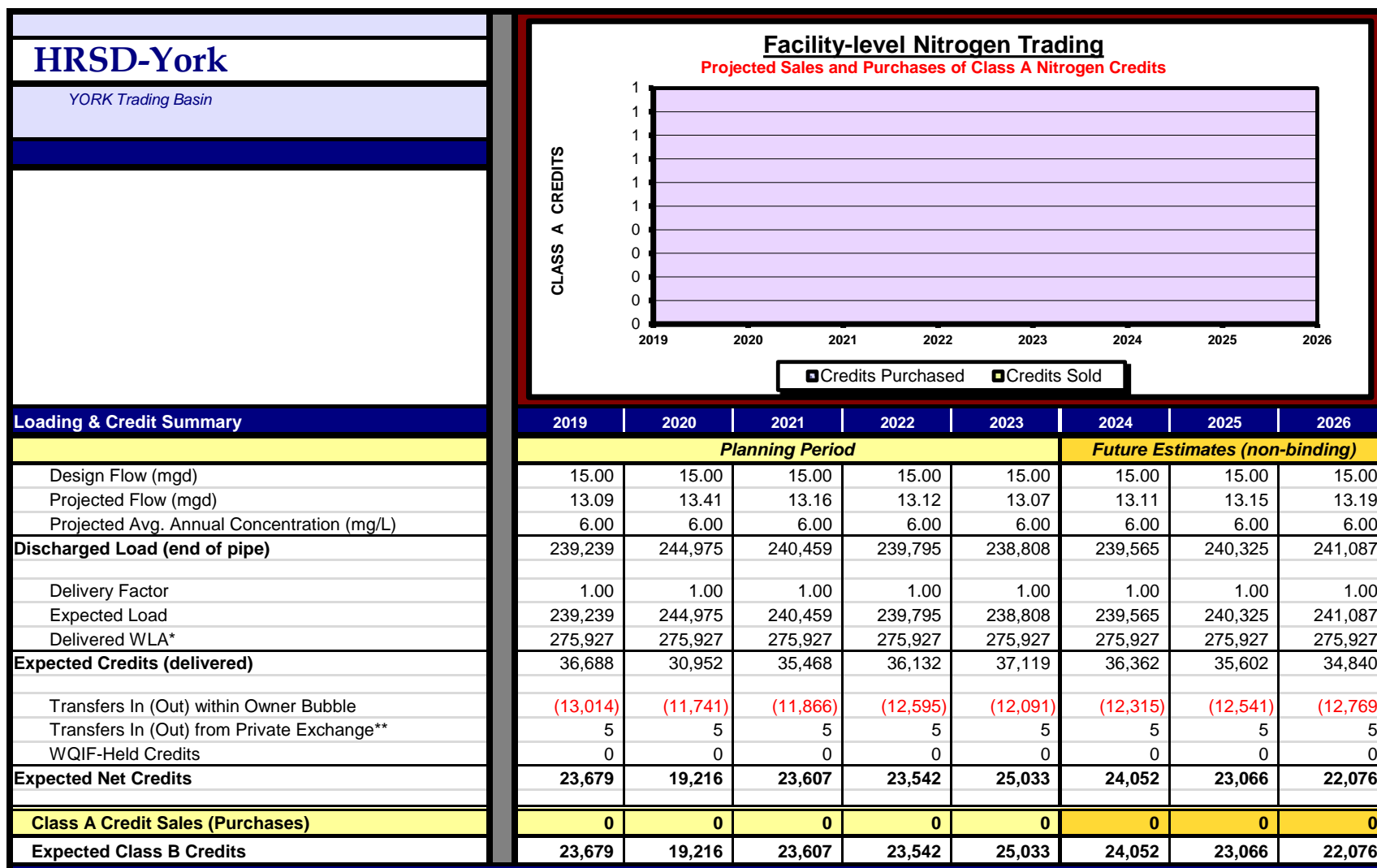
[illegible]

## NITROGEN FACILITY SUMMARY





## NITROGEN FACILITY SUMMARY



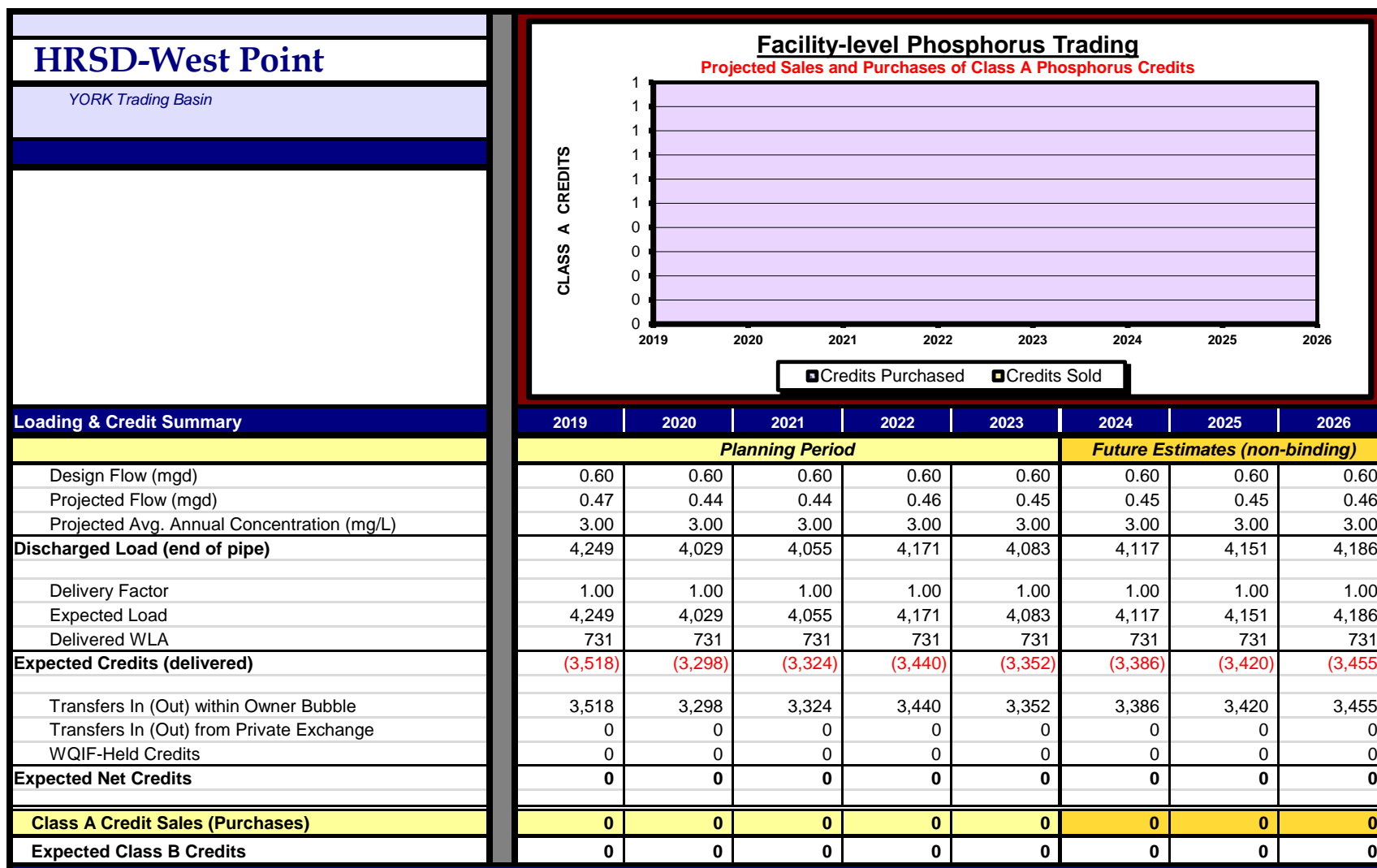
\* Reflects consolidation of the HRSD-Mathews WLA

\*\* Represents credits received via private trade with the Department of Energy-Jefferson Lab

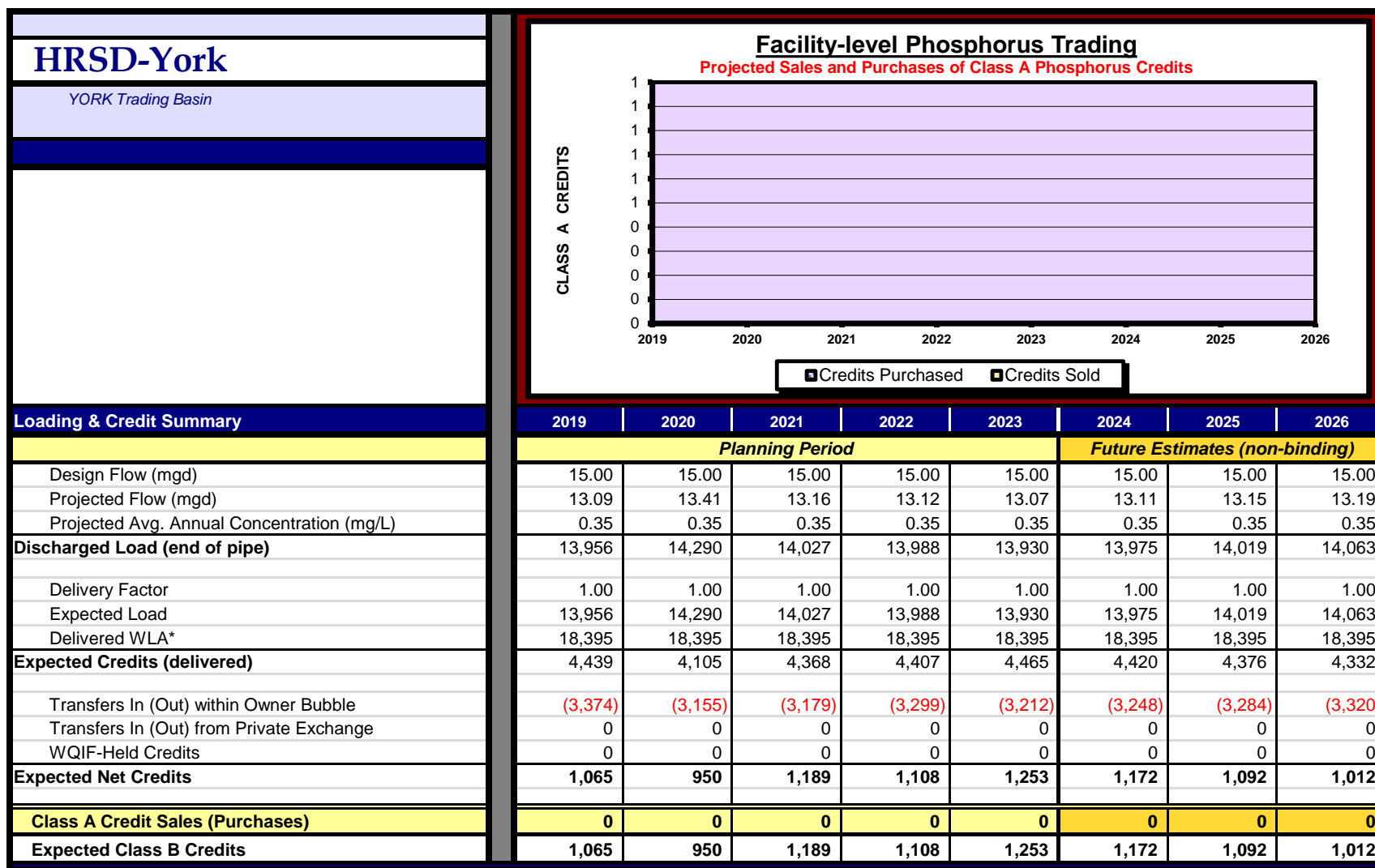
## PHOSPHORUS FACILITY SUMMARY

<div> <div>HRSD-King William</div> <div>YORK Trading Basin</div> </div>	<div> <div>Facility-level Phosphorus Trading</div> <div>Projected Sales and Purchases of Class A Phosphorus Credits</div> </div>							
	<div> <div>2019</div> <div>2020</div> <div>2021</div> <div>2022</div> <div>2023</div> <div>2024</div> <div>2025</div> <div>2026</div> </div>							
	<div> <div>Credits Purchased</div> <div>Credits Sold</div> </div>							
<div>Loading &amp; Credit Summary</div>	2019	2020	2021	2022	2023	2024	2025	2026
	Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Projected Flow (mgd)	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06
Projected Avg. Annual Concentration (mg/L)	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
Discharged Load (end of pipe)	46	47	45	49	50	52	54	55
Delivery Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load	46	47	45	49	50	52	54	55
Delivered WLA	190	190	190	190	190	190	190	190
Expected Credits (delivered)	144	143	145	141	140	138	136	135
Transfers In (Out) within Owner Bubble	(144)	(143)	(145)	(141)	(140)	(138)	(136)	(135)
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
Expected Net Credits	0	0	0	0	0	0	0	0
Class A Credit Sales (Purchases)	0	0	0	0	0	0	0	0
Expected Class B Credits	0	0	0	0	0	0	0	0

## PHOSPHORUS FACILITY SUMMARY

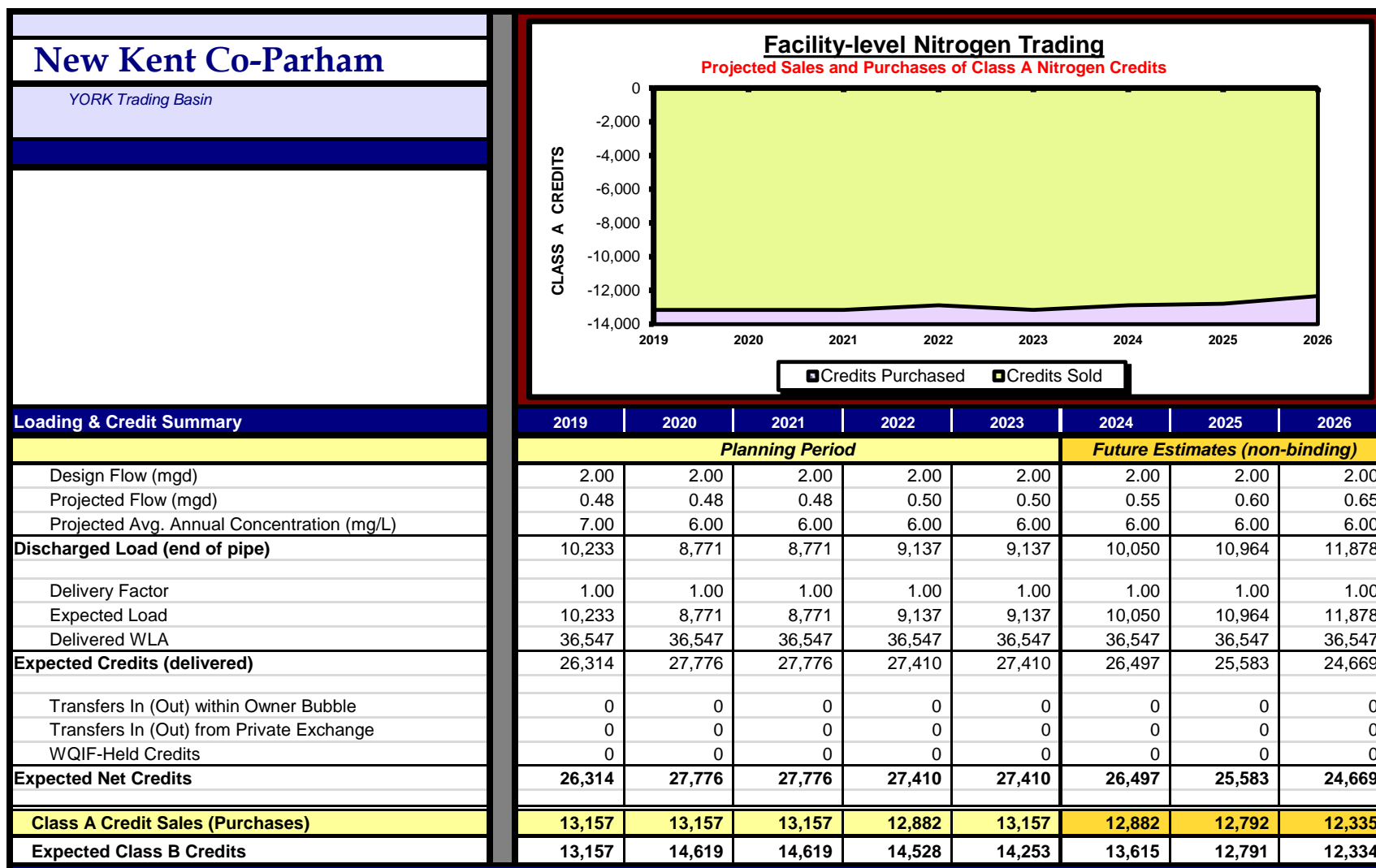


## PHOSPHORUS FACILITY SUMMARY

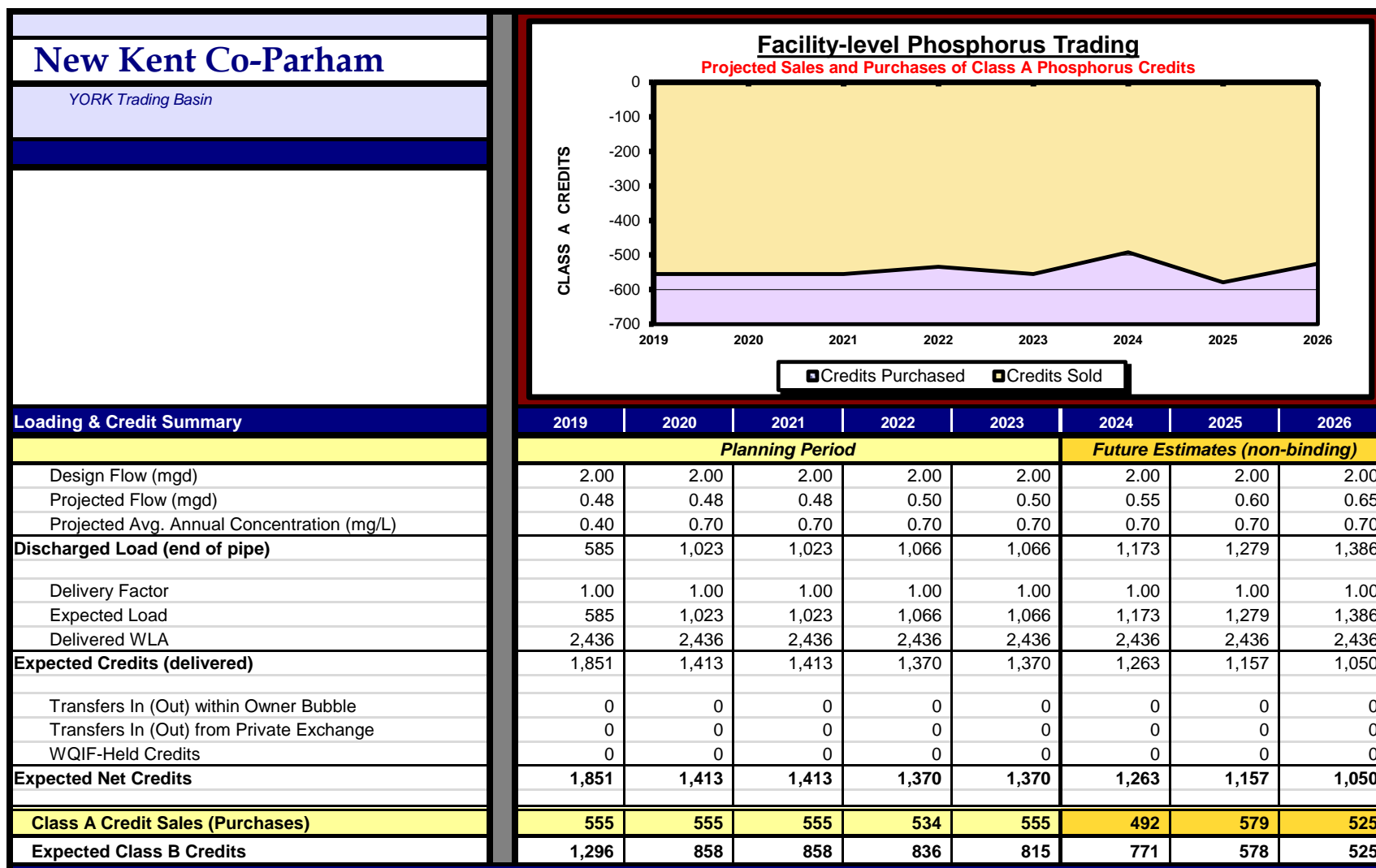


\* Reflects consolidation of the HRSD-Mathews WLA

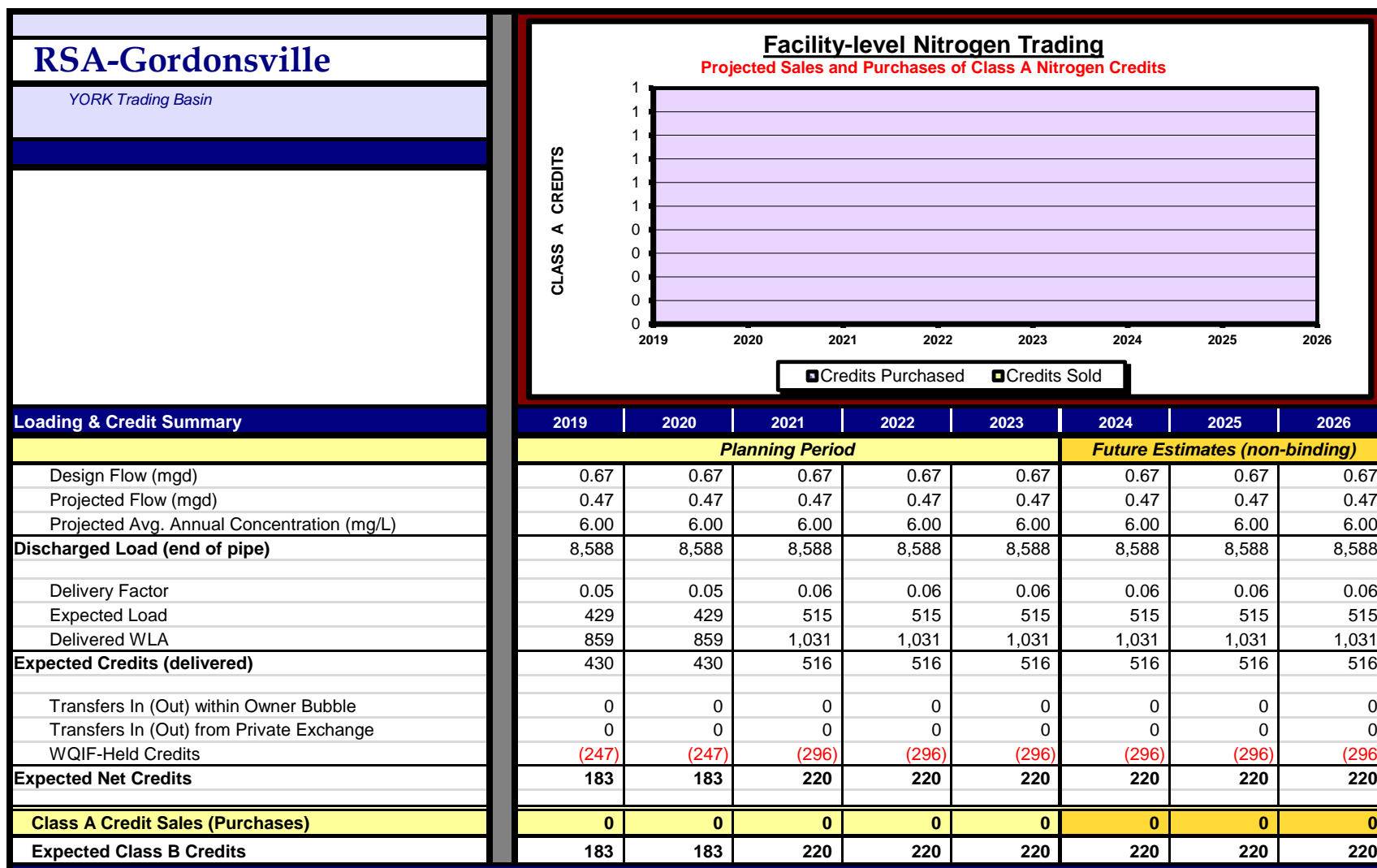
## NITROGEN FACILITY SUMMARY



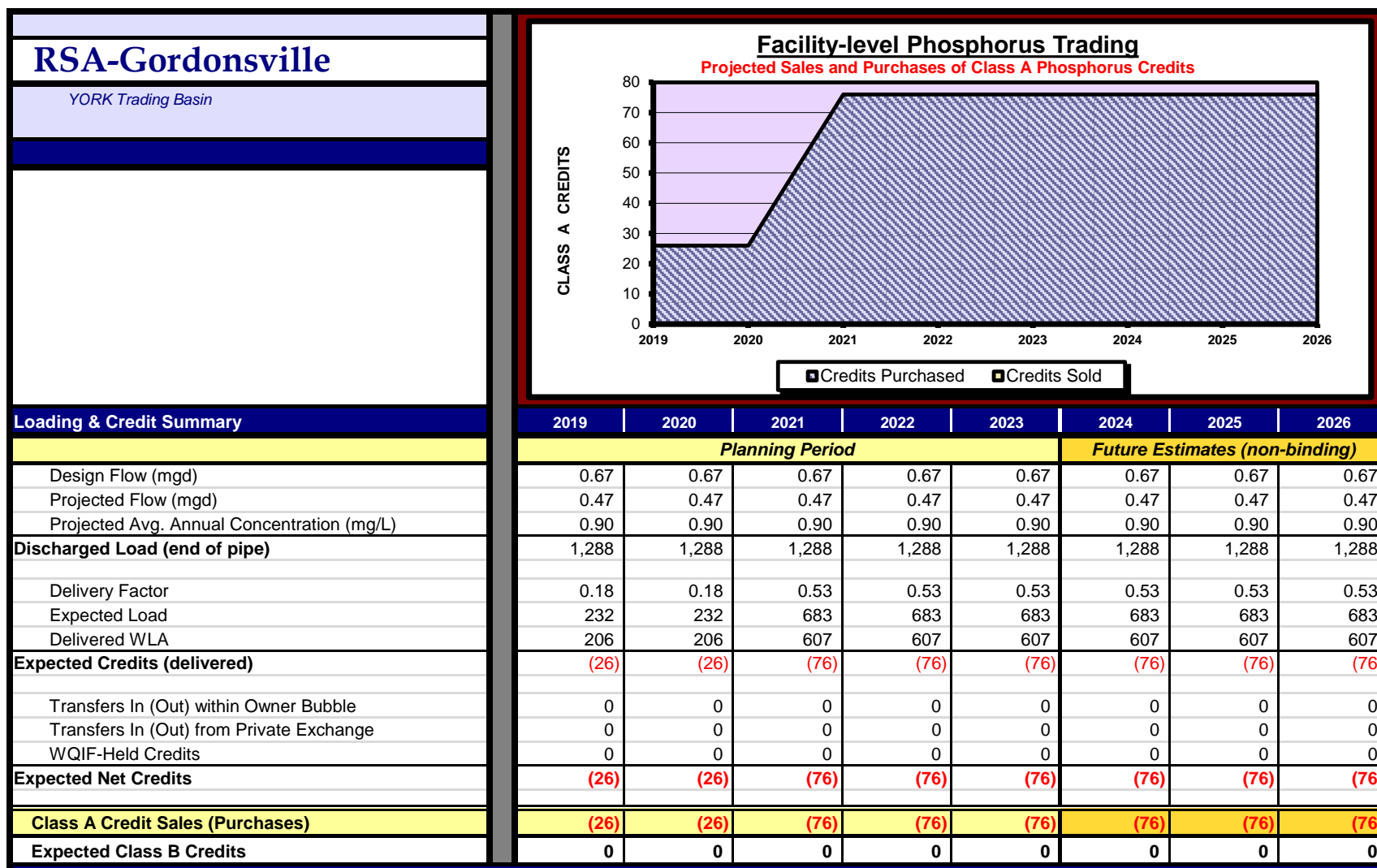
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

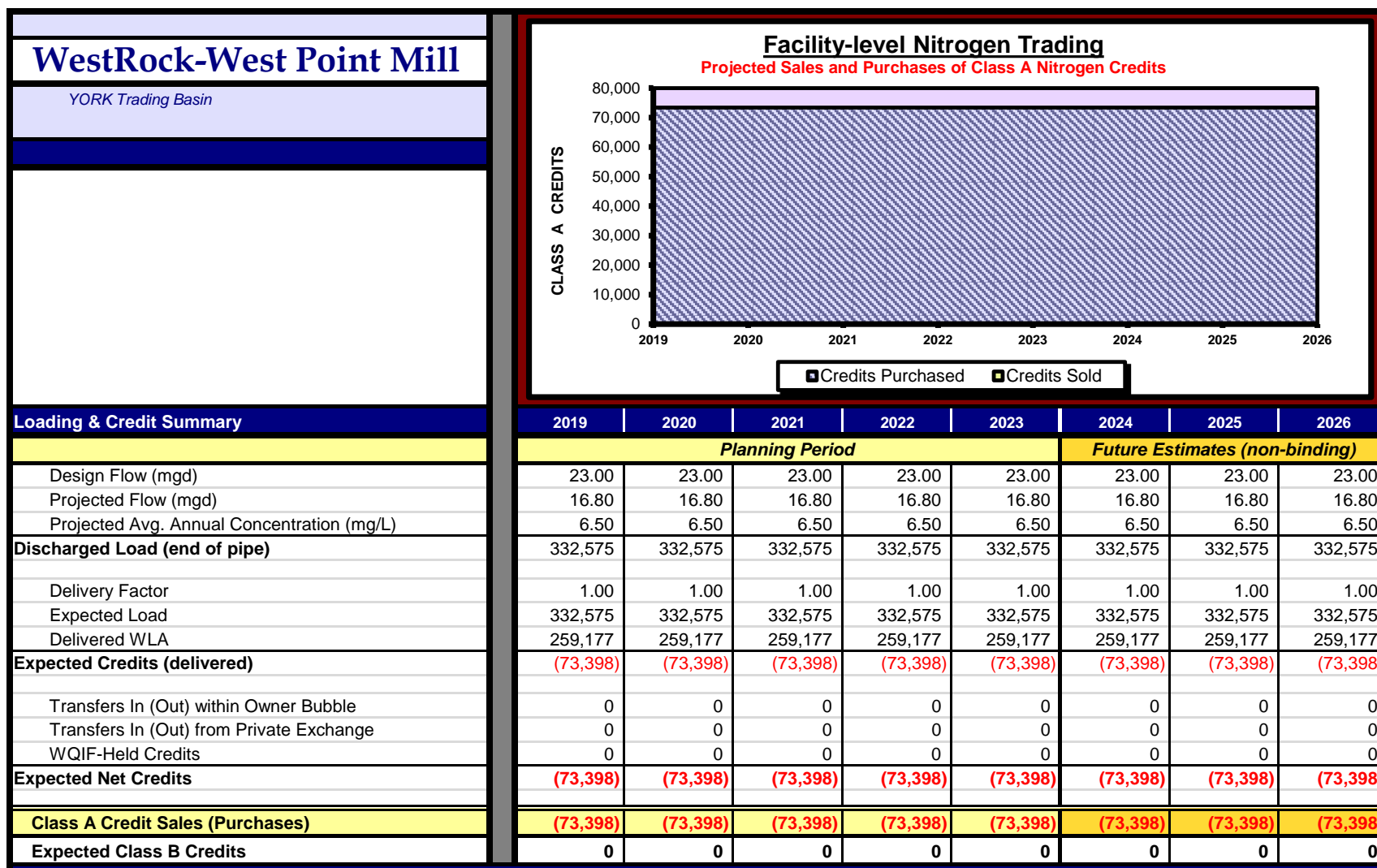


## PHOSPHORUS FACILITY SUMMARY





## NITROGEN FACILITY SUMMARY

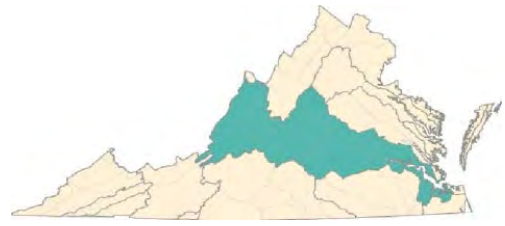


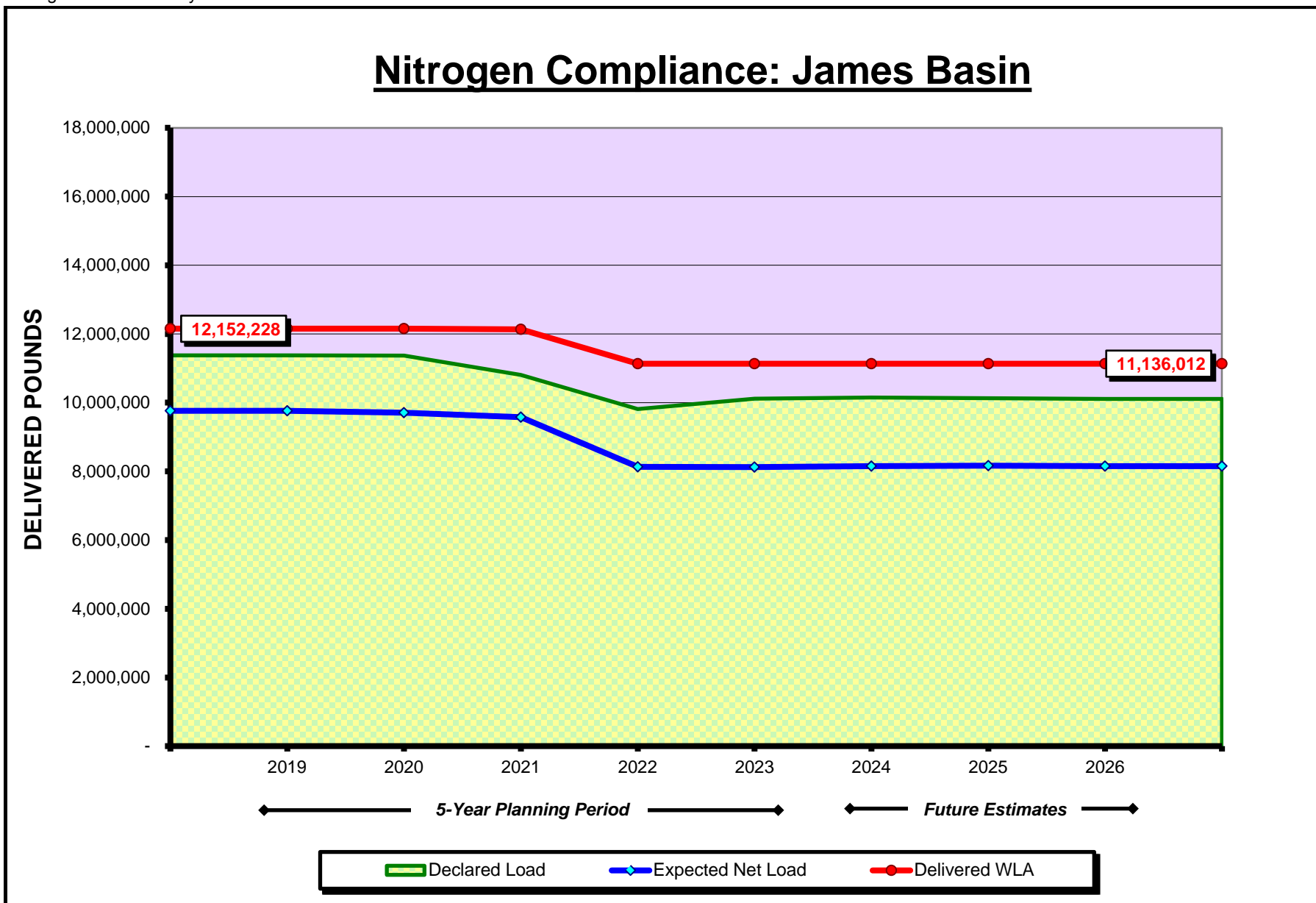
## PHOSPHORUS FACILITY SUMMARY

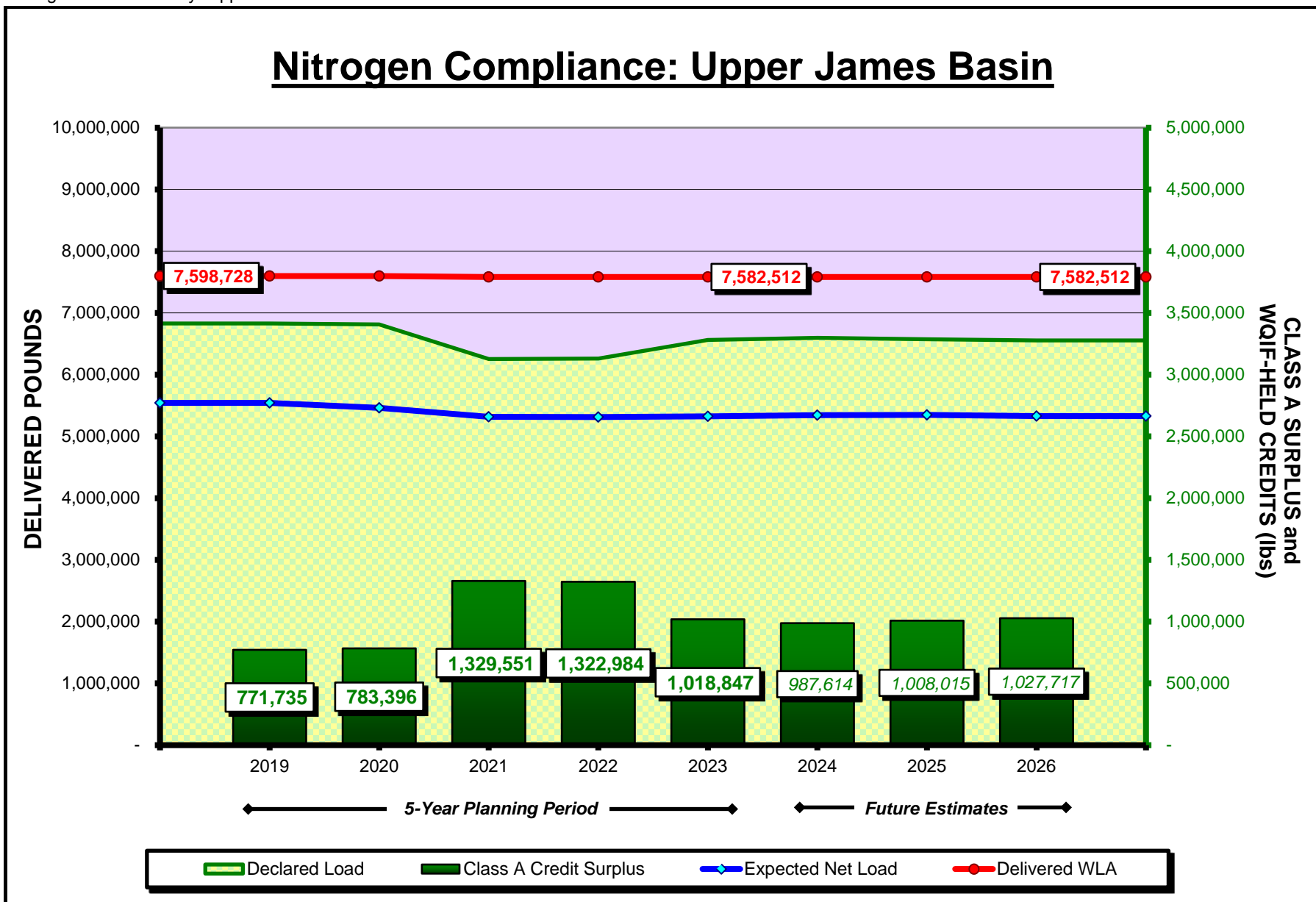
[illegible]

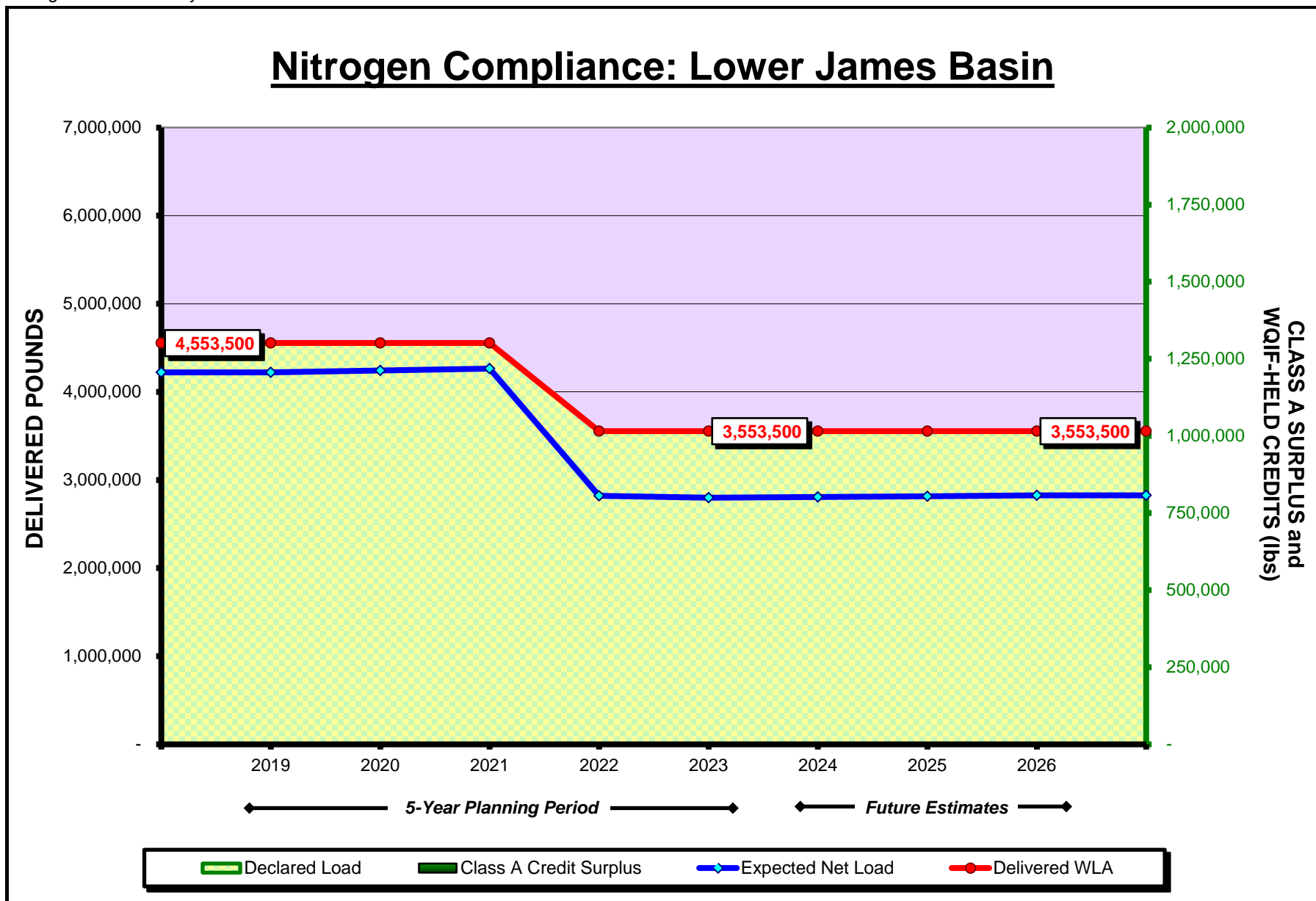
SECTION 5

# James River Basin Exchange Compliance Plan









## JAMES Basin: Nitrogen Credit Ledger

Compliance Year:		2019	Credit Forecasts		Preliminary Use of Credits			Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.42	\$ 3.82	\$ 0.03
UPPER JAMES BASIN	7,598,728	5,536,634	2,062,094	-	(163)	(4,276)	2,057,655		880,770	(109,035)	1,285,920
AdvanSix-Hopewell	1,090,798	852,757	238,041	-	-	-	238,041		-	-	238,041
Alleghany Co-L. Jackson	16,629	6,271	10,358	-	-	(4,276)	6,082		4,500	-	1,582
Alleghany Co-Low Moor	2,376	2,178	198	-	-	-	198		-	-	198
Amherst (Town)	3,728	2,042	1,686	-	-	-	1,686		843	-	843
Aqua Virginia-L. Monticello	12,182	48,237	(36,055)	-	-	-	(36,055)		-	(36,055)	-
Buena Vista	23,024	29,045	(6,021)	-	-	-	(6,021)		-	(6,021)	-
BWX Technologies, Inc	121,550	104,524	17,026	-	-	-	17,026		15,000	-	2,026
Chesterfield-Falling Cr.	153,801	153,770	31	-	-	-	31		-	-	31
Chesterfield-Proctors Cr.	411,151	241,528	169,623	-	(169,623)	-	-		-	-	-
Covington	11,512	18,427	(6,915)	-	-	-	(6,915)		-	(6,915)	-
Crewe	2,650	772	1,878	-	-	-	1,878		1,878	-	-
Dominion-Chesterfield	272,036	189,070	82,966	-	-	-	82,966		-	-	82,966
DuPont-Spruance	201,080	261,124	(60,044)	-	-	-	(60,044)		-	(60,044)	-
Georgia-Pacific	73,493	51,965	21,528	-	-	-	21,528		9,000	-	12,528
Greif Packaging	47,610	47,610	-	-	-	-	-		-	-	-
Henrico Co	1,142,085	839,582	302,503	-	-	-	302,503		272,252	-	30,251
Hopewell RWTF	1,827,336	1,232,477	594,859	-	-	-	594,859		297,430	-	297,429
Lynchburg	348,412	218,169	130,243	-	-	-	130,243		95,000	-	35,243
MSA-Lexington	17,542	4,873	12,669	-	-	-	12,669		900	-	11,769
Philip Morris	139,724	54,820	84,904	-	-	-	84,904		57,592	-	27,312
Richmond	1,093,652	548,201	545,451	-	-	-	545,451		-	-	545,451
RWSA-Moores Creek	189,606	70,521	119,085	-	(163)	-	118,922		118,921	-	1
South Central WWA	350,239	519,613	(169,374)	-	169,623	-	249		-	-	249
Tyson Foods-Glen Allen	3,128	3,128	-	-	-	-	-		-	-	-
WestRock-Covington	43,384	35,930	7,454	-	-	-	7,454		7,454	-	-
								PRICE:	No Sale	No Sale	No Sale
LOWER JAMES BASIN	4,553,500	4,221,955	331,545	-	(1)	-	331,544		-	-	331,544
HRSD (Bubble)	4,553,500	4,221,955	331,545	-	(1)	-	331,544		-	-	331,544

\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.

\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.

[illegible]

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**



## JAMES Basin: Nitrogen Credit Ledger

Compliance Year:	2021	Credit Forecasts		Preliminary Use of Credits				Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.18	\$ 3.87	\$ 0.03
UPPER JAMES BASIN	7,582,512	5,311,016	2,271,496	-	(163)	(4,440)	2,266,893		1,405,992	(76,441)	937,342
AdvanSix-Hopewell	1,090,798	774,790	316,008	-	-	-	316,008		75,000	-	241,008
Alleghany Co-L. Jackson	17,268	6,513	10,755	-	-	(4,440)	6,315		4,500	-	1,815
Alleghany Co-Low Moor	2,467	2,352	115	-	-	-	115		-	-	115
Amherst (Town)	4,715	3,279	1,436	-	-	-	1,436		718	-	718
Aqua Virginia-L. Monticello	11,636	11,543	93	-	-	-	93		-	-	93
Buena Vista	22,613	28,526	(5,913)	-	-	-	(5,913)		-	(5,913)	-
BWX Technologies, Inc	119,680	102,916	16,764	-	-	-	16,764		15,000	-	1,764
Chesterfield-Falling Cr.	153,801	154,638	(837)	837	-	-	-		-	-	-
Chesterfield-Proctors Cr.	411,151	239,914	171,237	(837)	-	-	170,400		-	-	170,400
Covington	11,512	18,427	(6,915)	-	-	-	(6,915)		-	(6,915)	-
Crewe	2,284	665	1,619	-	-	-	1,619		1,619	-	-
Dominion-Chesterfield	272,036	189,070	82,966	-	-	-	82,966		-	-	82,966
DuPont-Spruance	201,080	264,693	(63,613)	-	-	-	(63,613)		-	(63,613)	-
Georgia-Pacific	73,493	51,965	21,528	-	-	-	21,528		17,000	-	4,528
Greif Packaging	46,877	46,877	-	-	-	-	-		-	-	-
Henrico Co	1,142,085	890,768	251,317	-	-	-	251,317		226,185	-	25,132
Hopewell RWTF	1,827,336	1,242,588	584,748	-	-	-	584,748		292,374	-	292,374
Lynchburg	343,052	215,452	127,600	-	-	-	127,600		95,000	-	32,600
MSA-Lexington	16,994	4,721	12,273	-	-	-	12,273		800	-	11,473
Philip Morris	139,724	54,820	84,904	-	-	-	84,904		58,000	-	26,904
Richmond	1,093,652	548,201	545,451	-	-	-	545,451		500,000	-	45,451
RWSA-Moores Creek	181,116	68,610	112,506	-	(163)	-	112,343		112,342	-	1
South Central WWA	350,239	350,239	-	-	-	-	-		-	-	-
Tyson Foods-Glen Allen	3,519	3,519	-	-	-	-	-		-	-	-
WestRock-Covington	43,384	35,930	7,454	-	-	-	7,454		7,454	-	-
								PRICE:	No Sale	No Sale	No Sale
LOWER JAMES BASIN	4,553,500	4,262,688	290,812	-	(1)	-	290,811		-	-	290,811
HRSD (Bubble)	4,553,500	4,262,688	290,812	-	(1)	-	290,811		-	-	290,811

\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.

\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.

[illegible]

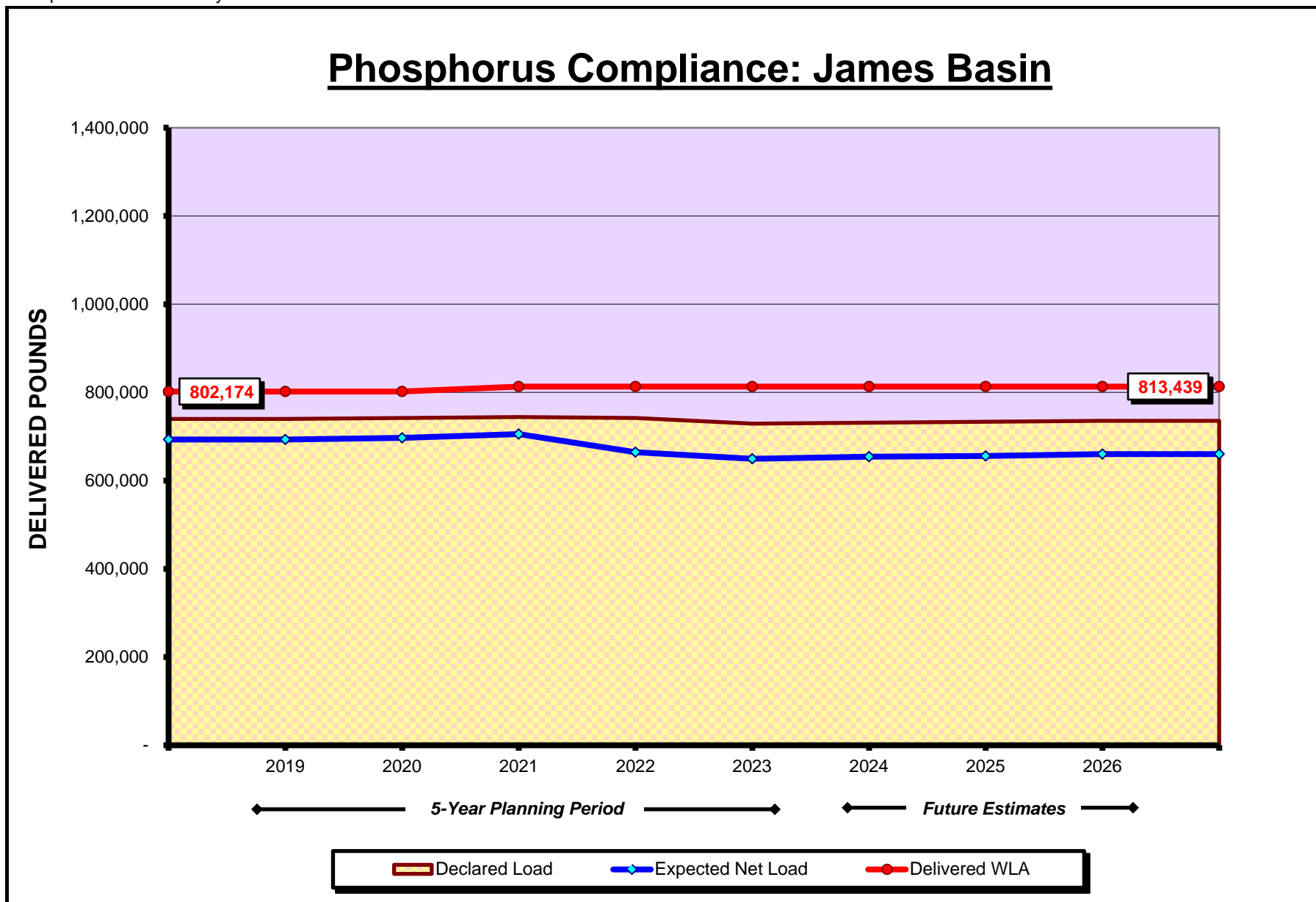
**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

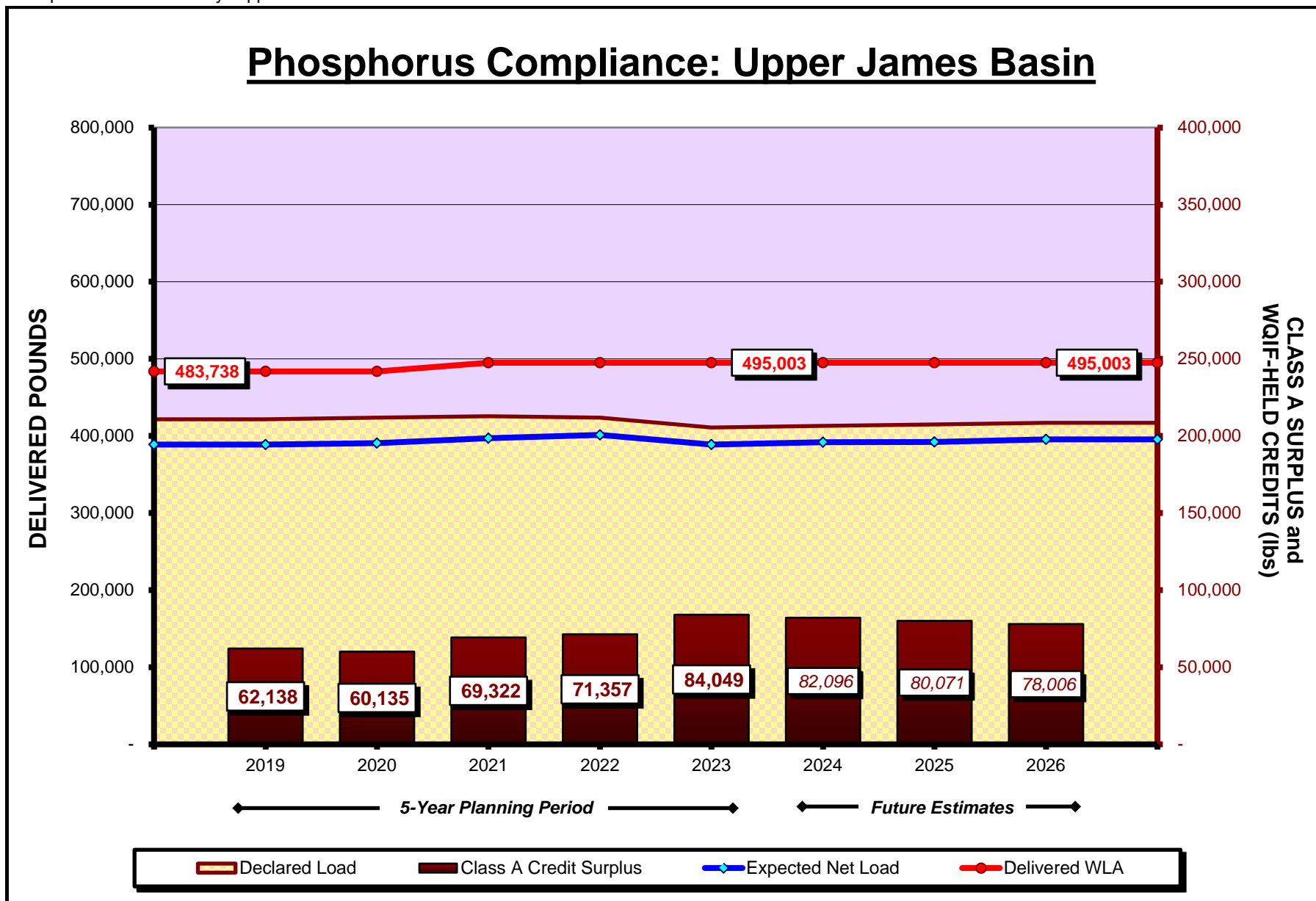
## JAMES Basin: Nitrogen Credit Ledger

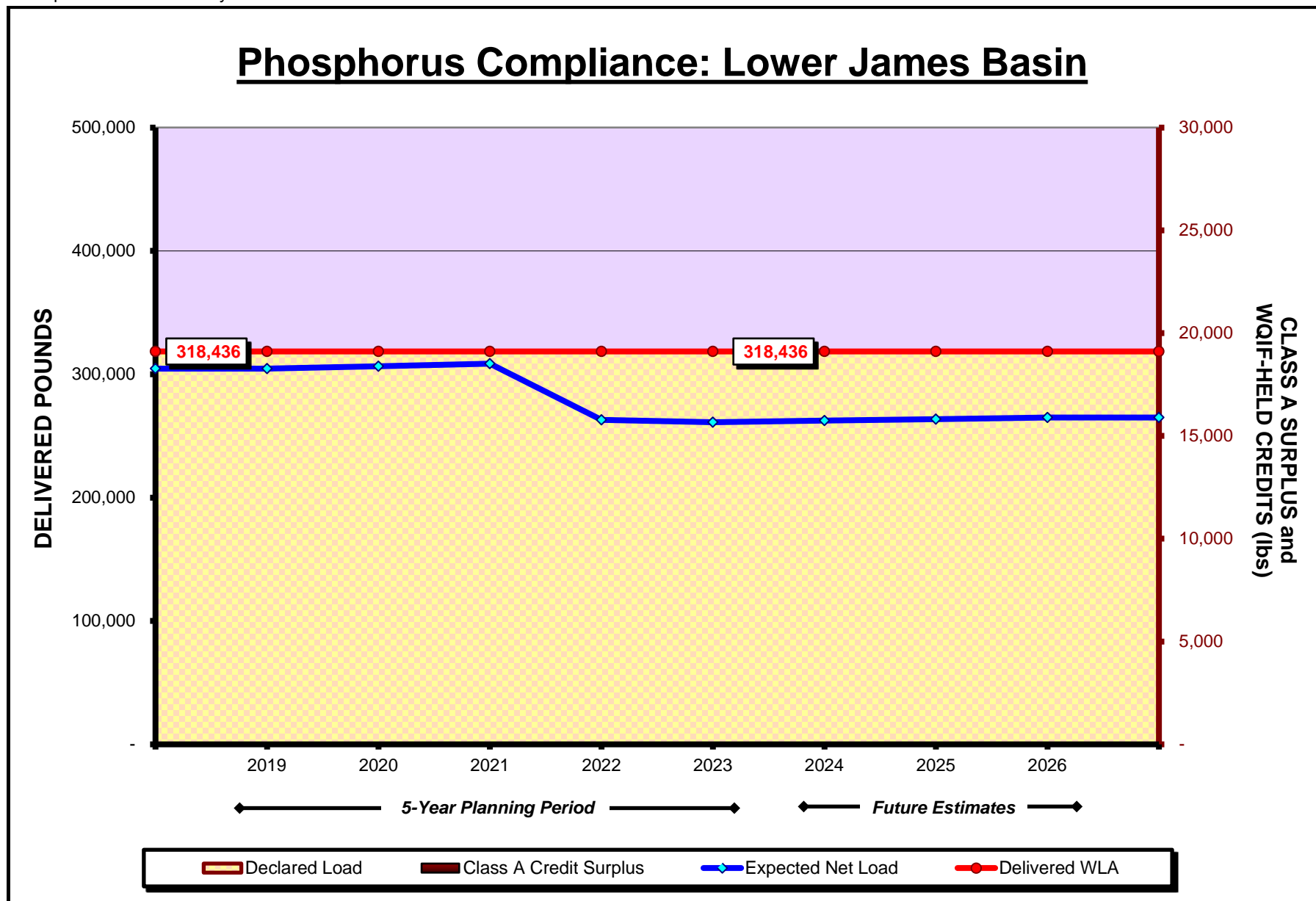
Compliance Year:		2023	Credit Forecasts		Preliminary Use of Credits			Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 0.24	\$ 4.04	\$ 0.02
UPPER JAMES BASIN	7,582,512	5,319,489	2,263,023	-	(163)	(4,440)	2,258,420		1,092,846	(73,999)	1,239,573
AdvanSix-Hopewell	1,090,798	723,625	367,173	-	-	-	367,173		100,000	-	267,173
Alleghany Co-L. Jackson	17,268	6,513	10,755	-	-	(4,440)	6,315		4,500	-	1,815
Alleghany Co-Low Moor	2,467	1,809	658	-	-	-	658		-	-	658
Amherst (Town)	4,715	1,572	3,143	-	-	-	3,143		1,572	-	1,571
Aqua Virginia-L. Monticello	11,636	11,543	93	-	-	-	93		-	-	93
Buena Vista	22,613	28,307	(5,694)	-	-	-	(5,694)		-	(5,694)	-
BWX Technologies, Inc	119,680	102,916	16,764	-	-	-	16,764		15,000	-	1,764
Chesterfield-Falling Cr.	153,801	157,303	(3,502)	3,502	-	-	-		-	-	-
Chesterfield-Proctors Cr.	411,151	242,579	168,572	(3,502)	-	-	165,070		-	-	165,070
Covington	11,512	18,427	(6,915)	-	-	-	(6,915)		-	(6,915)	-
Crewe	2,284	665	1,619	-	-	-	1,619		1,619	-	-
Dominion-Chesterfield	272,036	189,070	82,966	-	-	-	82,966		-	-	82,966
DuPont-Spruance	201,080	262,470	(61,390)	-	-	-	(61,390)		-	(61,390)	-
Georgia-Pacific	73,493	51,965	21,528	-	-	-	21,528		17,000	-	4,528
Greif Packaging	46,877	46,877	-	-	-	-	-		-	-	-
Henrico Co	1,142,085	944,940	197,145	-	-	-	197,145		177,431	-	19,714
Hopewell RWTF	1,827,336	1,260,862	566,474	-	-	-	566,474		-	-	566,474
Lynchburg	343,052	210,197	132,855	-	-	-	132,855		97,000	-	35,855
MSA-Lexington	16,994	4,721	12,273	-	-	-	12,273		800	-	11,473
Philip Morris	139,724	45,683	94,041	-	-	-	94,041		60,000	-	34,041
Richmond	1,093,652	548,201	545,451	-	-	-	545,451		500,000	-	45,451
RWSA-Moores Creek	181,116	70,482	110,634	-	(163)	-	110,471		110,470	-	1
South Central WWA	350,239	350,239	-	-	-	-	-		-	-	-
Tyson Foods-Glen Allen	3,519	2,593	926	-	-	-	926		-	-	926
WestRock-Covington	43,384	35,930	7,454	-	-	-	7,454		7,454	-	-
								PRICE:	No Sale	No Sale	No Sale
LOWER JAMES BASIN	3,553,500	2,798,088	755,412	-	(1)	-	755,411		-	-	755,411
HRSD (Bubble)	3,553,500	2,798,088	755,412	-	(1)	-	755,411		-	-	755,411

\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.

\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.







[illegible]

*\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.*

## JAMES Basin: Phosphorus Credit Ledger

Compliance Year:		2020	Credit Forecasts		Preliminary Use of Credits			Credit Exchange (Pounds)			
Facility Name	Delivered WLA	Expected Load	Expected Credits	In-Bubble Exchange	Private Exchange	WQIF-Held Credits	Expected Net Credits		Class A Sales	Class A* Purchases	Class B Sales**
								PRICE:	\$ 1.11	\$ 5.81	\$ 0.28
UPPER JAMES BASIN	483,738	389,943	93,795	-	(59)	(734)	93,002		76,436	(16,301)	32,867
AdvanSix-Hopewell	41,841	32,283	9,558	-	-	-	9,558		-	-	9,558
Alleghany Co-L. Jackson	2,853	796	2,057	(849)	-	(734)	474		300	-	174
Alleghany Co-Low Moor	407	1,256	(849)	849	-	-	-		-	-	-
Amherst (Town)	489	1,110	(621)	-	-	-	(621)		-	(621)	-
Aqua Virginia-L. Monticello	811	3,988	(3,177)	-	-	-	(3,177)		-	(3,177)	-
Buena Vista	1,833	5,925	(4,092)	-	-	-	(4,092)		-	(4,092)	-
BWX Technologies, Inc	815	425	390	-	-	-	390		100	-	290
Chesterfield-Falling Cr.	12,473	16,717	(4,244)	4,244	-	-	-		-	-	-
Chesterfield-Proctors Cr.	33,344	26,097	7,247	(4,244)	(40)	-	2,963		-	-	2,963
Covington	2,445	1,604	841	-	-	-	841		830	-	11
Crewe	284	32	252	-	-	-	252		252	-	-
Dominion-Chesterfield	170	210	(40)	-	40	-	-		-	-	-
DuPont-Spruance	6,339	13,743	(7,404)	-	-	-	(7,404)		-	(7,404)	-
Georgia-Pacific	26,580	12,312	14,268	-	-	-	14,268		11,000	-	3,268
Greif Packaging	15,894	10,452	5,442	-	-	-	5,442		5,000	-	442
Henrico Co	92,623	61,772	30,851	-	-	-	30,851		27,766	-	3,085
Hopewell RWTF	61,749	57,561	4,188	-	-	-	4,188		-	-	4,188
Lynchburg	17,932	18,939	(1,007)	-	-	-	(1,007)		-	(1,007)	-
MSA-Lexington	2,445	603	1,842	-	-	-	1,842		921	-	921
Philip Morris	2,149	1,827	322	-	-	-	322		-	-	322
Richmond	55,574	47,968	7,606	-	-	-	7,606		-	-	7,606
RWSA-Moores Creek	12,227	6,573	5,654	-	(59)	-	5,595		5,594	-	1
South Central WWA	28,404	28,404	-	-	-	-	-		-	-	-
Tyson Foods-Glen Allen	188	150	38	-	-	-	38		-	-	38
WestRock-Covington	63,869	39,196	24,673	-	-	-	24,673		24,673	-	-
								PRICE:	No Sale	No Sale	No Sale
LOWER JAMES BASIN	318,436	306,509	11,927	-	(1)	-	11,926		-	-	11,926
HRSD (Bubble)	318,436	306,509	11,927	-	(1)	-	11,926		-	-	11,926

\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.

\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.



[illegible]

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

[illegible]

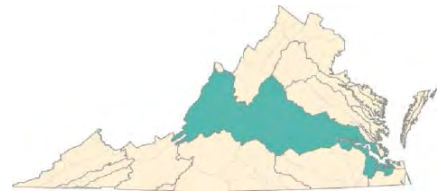
**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

[illegible]

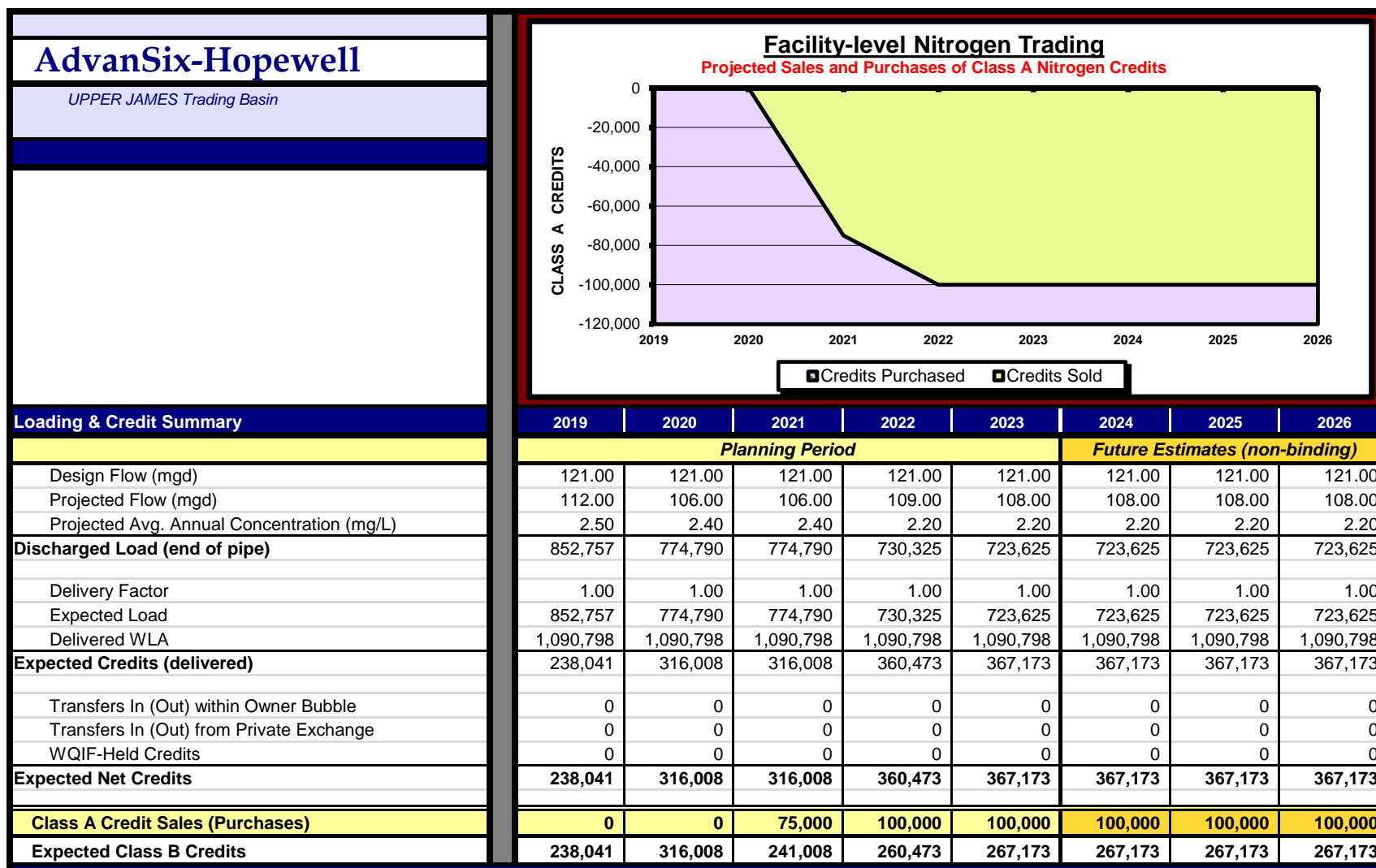
**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

# James River Basin

Supplemental Information for Individual Facilities



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

<div> <div>AdvanSix-Hopewell</div> <div>UPPER JAMES Trading Basin</div> </div>		<div> <div>Facility-level Phosphorus Trading</div> <div>Projected Sales and Purchases of Class A Phosphorus Credits</div> </div>							
Loading & Credit Summary		2019	2020	2021	2022	2023	2024	2025	2026
		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		121.00	121.00	121.00	121.00	121.00	121.00	121.00	121.00
Projected Flow (mgd)		112.00	106.00	106.00	109.00	108.00	108.00	108.00	108.00
Projected Avg. Annual Concentration (mg/L)		0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.11
Discharged Load (end of pipe)		34,110	32,283	32,283	36,516	36,181	36,181	36,181	36,181
Delivery Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load		34,110	32,283	32,283	36,516	36,181	36,181	36,181	36,181
Delivered WLA		41,841	41,841	41,841	41,841	41,841	41,841	41,841	41,841
Expected Credits (delivered)		7,731	9,558	9,558	5,325	5,660	5,660	5,660	5,660
Transfers In (Out) within Owner Bubble		0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		7,731	9,558	9,558	5,325	5,660	5,660	5,660	5,660
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		7,731	9,558	9,558	5,325	5,660	5,660	5,660	5,660

## Owner Bubble: Alleghany County

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

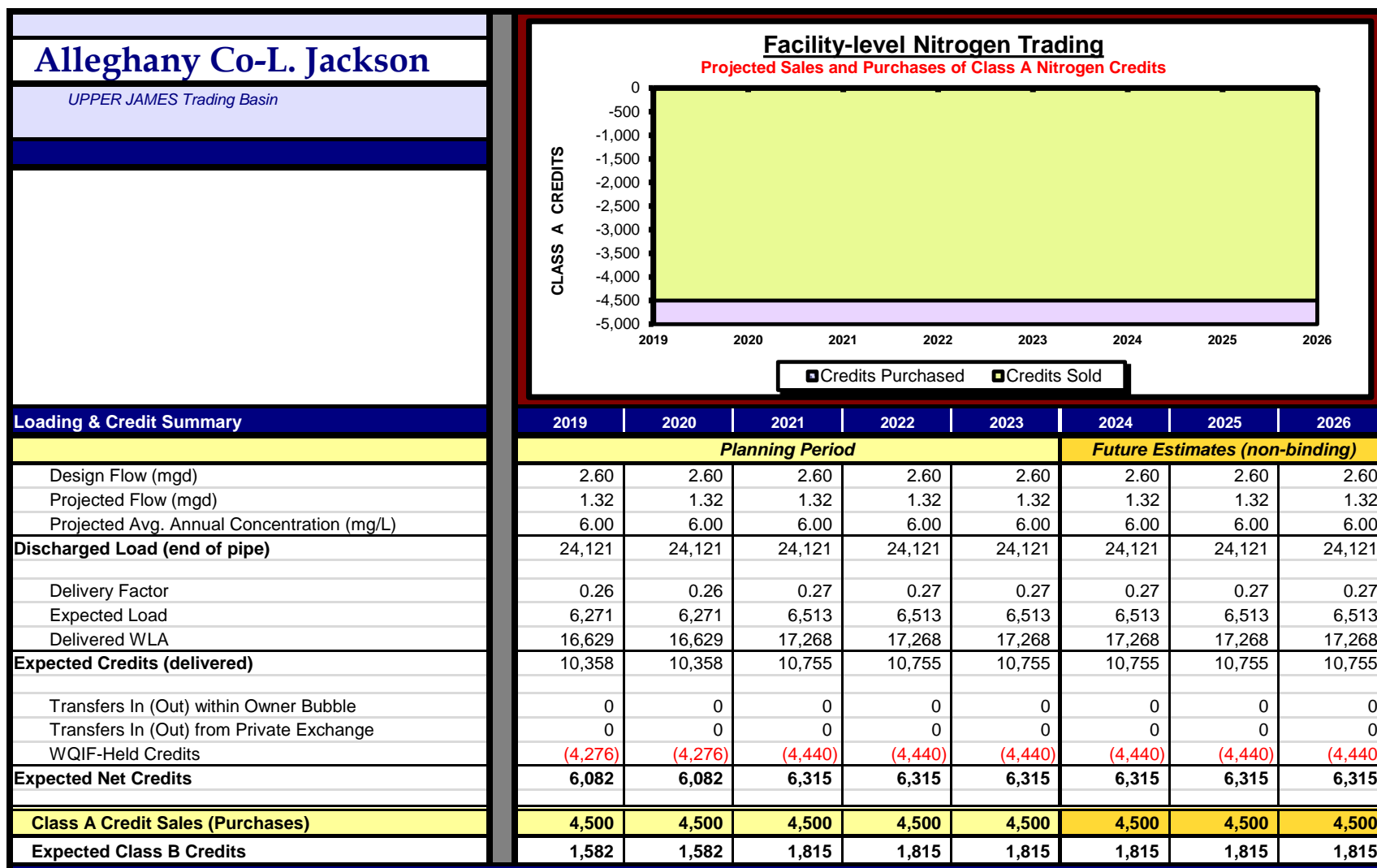
The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

<b>NITROGEN Credits</b>		<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Lower Jackson		-	-	-	-	-	-	-	-
Low Moor		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>		-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Lower Jackson		6,082	6,082	6,315	6,315	6,315	6,315	6,315	6,315
Low Moor		198	198	115	658	658	658	658	658
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>		<b>6,280</b>	<b>6,280</b>	<b>6,430</b>	<b>6,973</b>	<b>6,973</b>	<b>6,973</b>	<b>6,973</b>	<b>6,973</b>
<b>Class A Sales (Purchases)</b>		<b>4,500</b>	<b>4,500</b>	<b>4,500</b>	<b>4,500</b>	<b>4,500</b>	<b>4,500</b>	<b>4,500</b>	<b>4,500</b>
<i>Expected Class B Credits</i>		<i>1,780</i>	<i>1,780</i>	<i>1,930</i>	<i>2,473</i>	<i>2,473</i>	<i>2,473</i>	<i>2,473</i>	<i>2,473</i>
<i>WQIF-Held Credits</i>		<i>4,276</i>	<i>4,276</i>	<i>4,440</i>	<i>4,440</i>	<i>4,440</i>	<i>4,440</i>	<i>4,440</i>	<i>4,440</i>

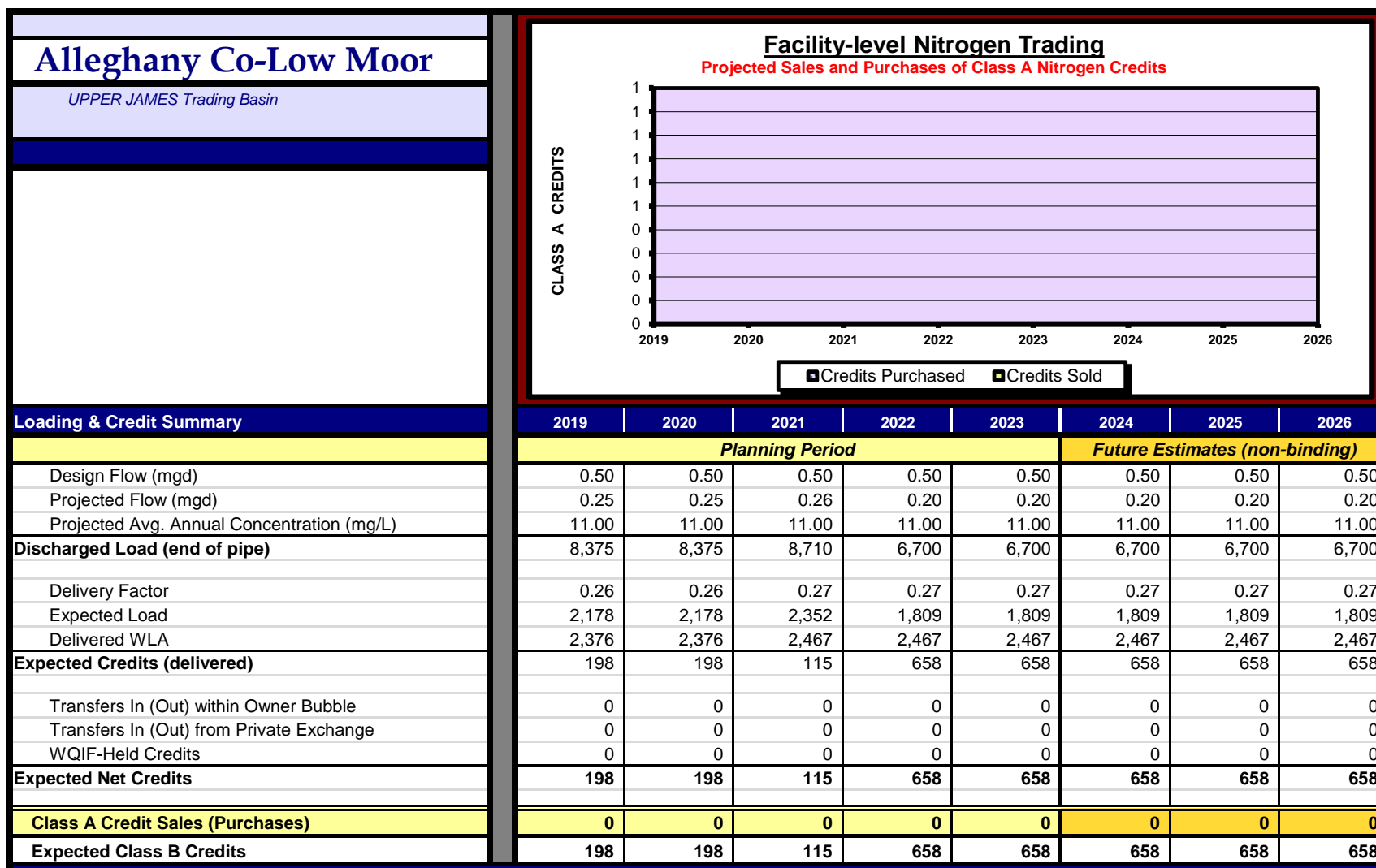
<b>PHOSPHORUS Credits</b>		<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Lower Jackson		(849)	(849)	(968)	(427)	(427)	(427)	(427)	(427)
Low Moor		849	849	968	427	427	427	427	427
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>		-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>		<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Lower Jackson		474	474	456	997	997	997	997	997
Low Moor		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-
<b>Expected Net Credits</b>		<b>474</b>	<b>474</b>	<b>456</b>	<b>997</b>	<b>997</b>	<b>997</b>	<b>997</b>	<b>997</b>
<b>Class A Sales (Purchases)</b>		<b>300</b>	<b>300</b>	<b>300</b>	<b>300</b>	<b>450</b>	<b>450</b>	<b>450</b>	<b>450</b>
<i>Expected Class B Credits</i>		<i>174</i>	<i>174</i>	<i>156</i>	<i>697</i>	<i>547</i>	<i>547</i>	<i>547</i>	<i>547</i>
<i>WQIF-Held Credits</i>		<i>734</i>	<i>734</i>	<i>789</i>	<i>789</i>	<i>789</i>	<i>789</i>	<i>789</i>	<i>789</i>

## NITROGEN FACILITY SUMMARY

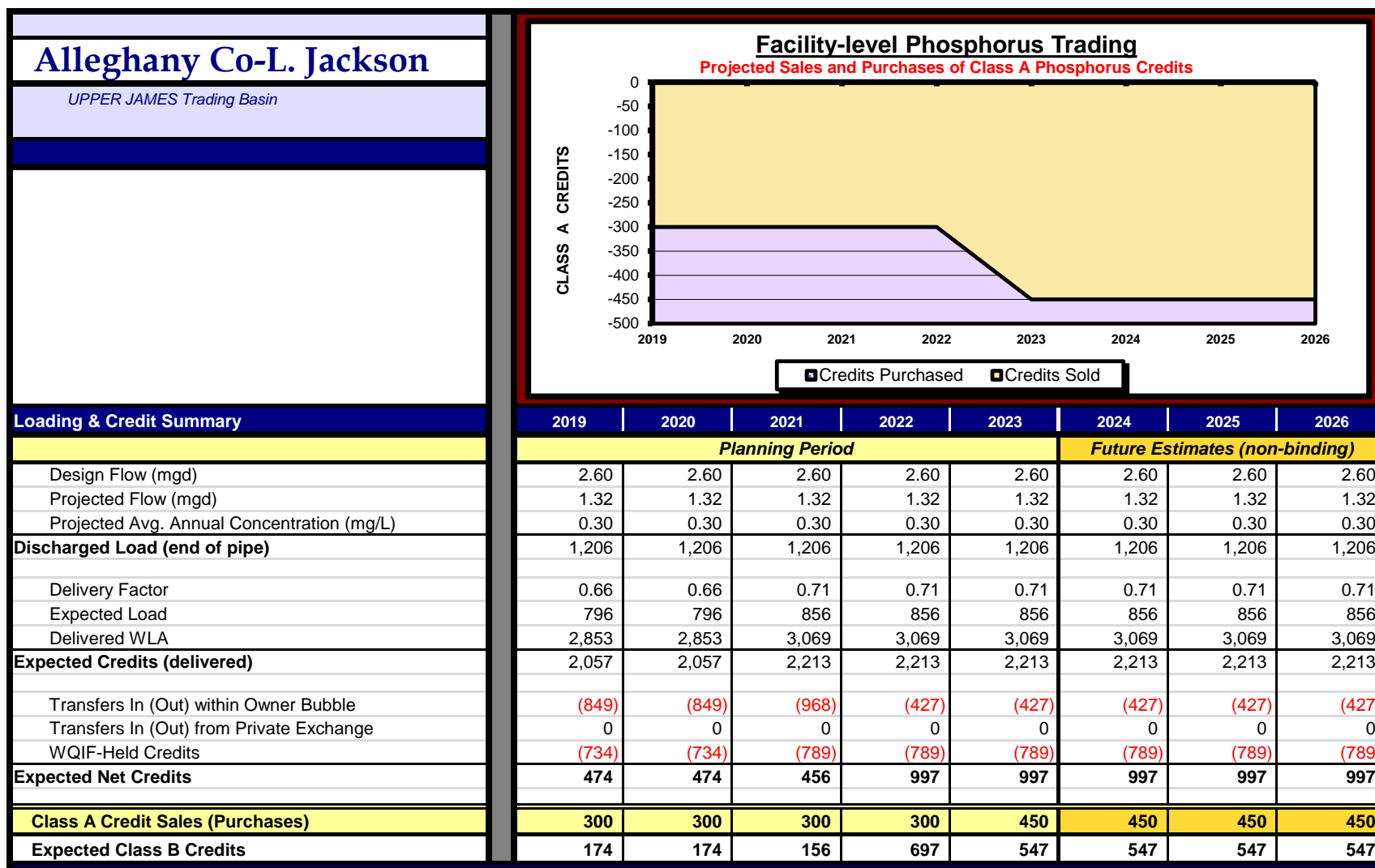




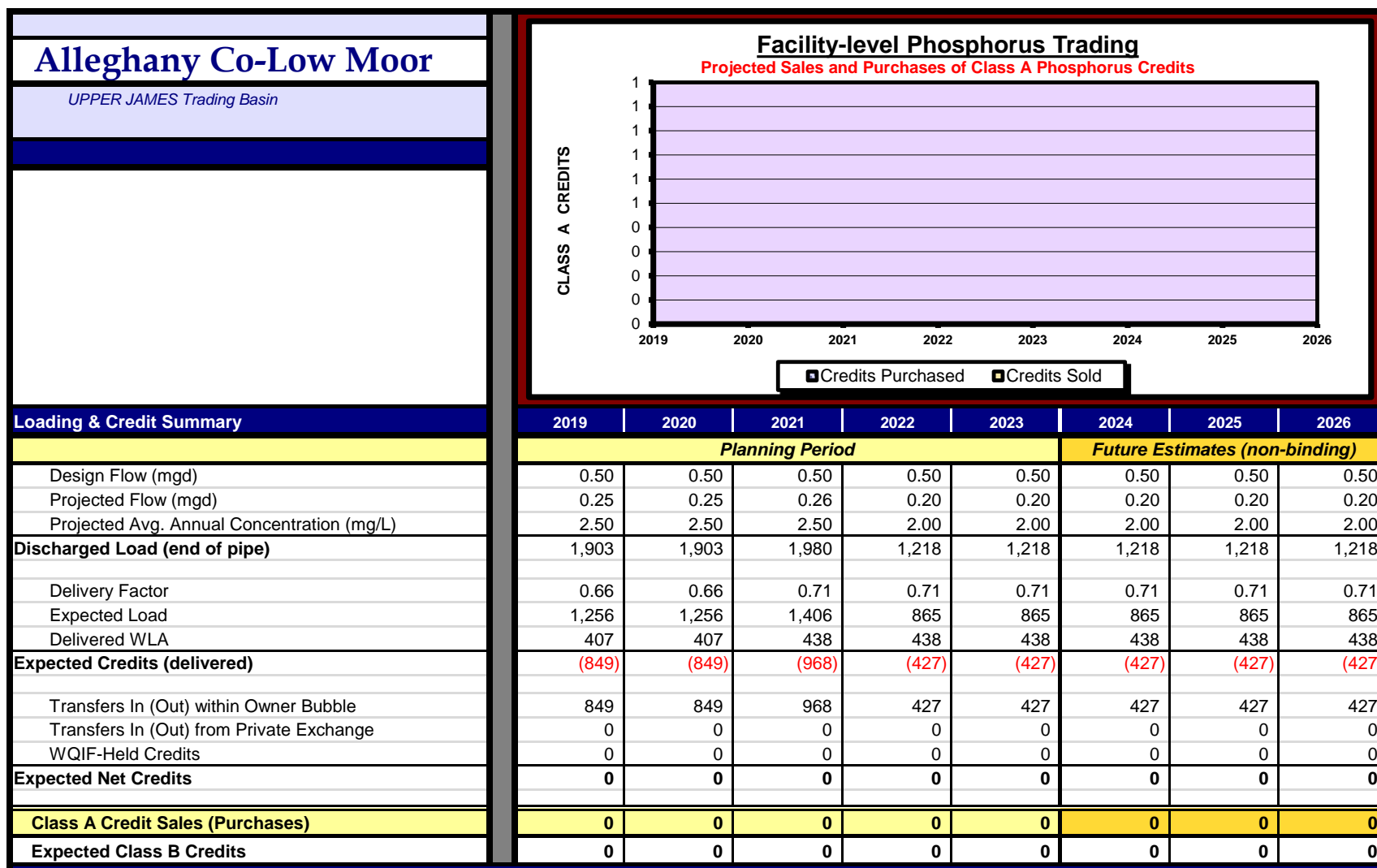
## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



### **Alleghany County - Additional Information**

Under an Agreement dated September 18, 2007, the Town of Clifton Forge's Plant was converted to a regional pump station and wastewater from that facility is pumped to the new regional Lower Jackson Plant owned and operated by Alleghany County. Flows from the Town of Clifton Forge's Plant ceased on October 8, 2011, the same day that the new regional Lower Jackson Plant began to discharge.

The County applied to DEQ for aggregated mass load limits in accordance with Part I B 3 (Facility Consolidation) of the Watershed General Permit. On February 13, 2012, DEQ notified the County that the request to consolidate load limits was accepted, effective January 1, 2012. This Annual Update and the preceding nitrogen and phosphorus facility summaries for the regional Lower Jackson Plant reflect the following combined wasteload allocations, consistent with the most recent registration list for the James Basin:

- TN: 27,410 (Lower Jackson Plant) + 36,547 (Clifton Forge) = 63,957 discharged pounds
- TP: 1,852 (Lower Jackson Plant) + 2,471 (Clifton Forge) = 4,323 discharged pounds

These consolidated wasteload allocations are based on a combined design flow of 3.5 mgd. The regional Lower Jackson Plant has been constructed and received a CTO for a design flow of 2.6 mgd. Accordingly, the following nitrogen and phosphorus Credits generated from 0.9 mgd of the facility's capacity (or 25.714%) will be designated as WQIF-Held Credits in accordance with the Watershed General Permit.

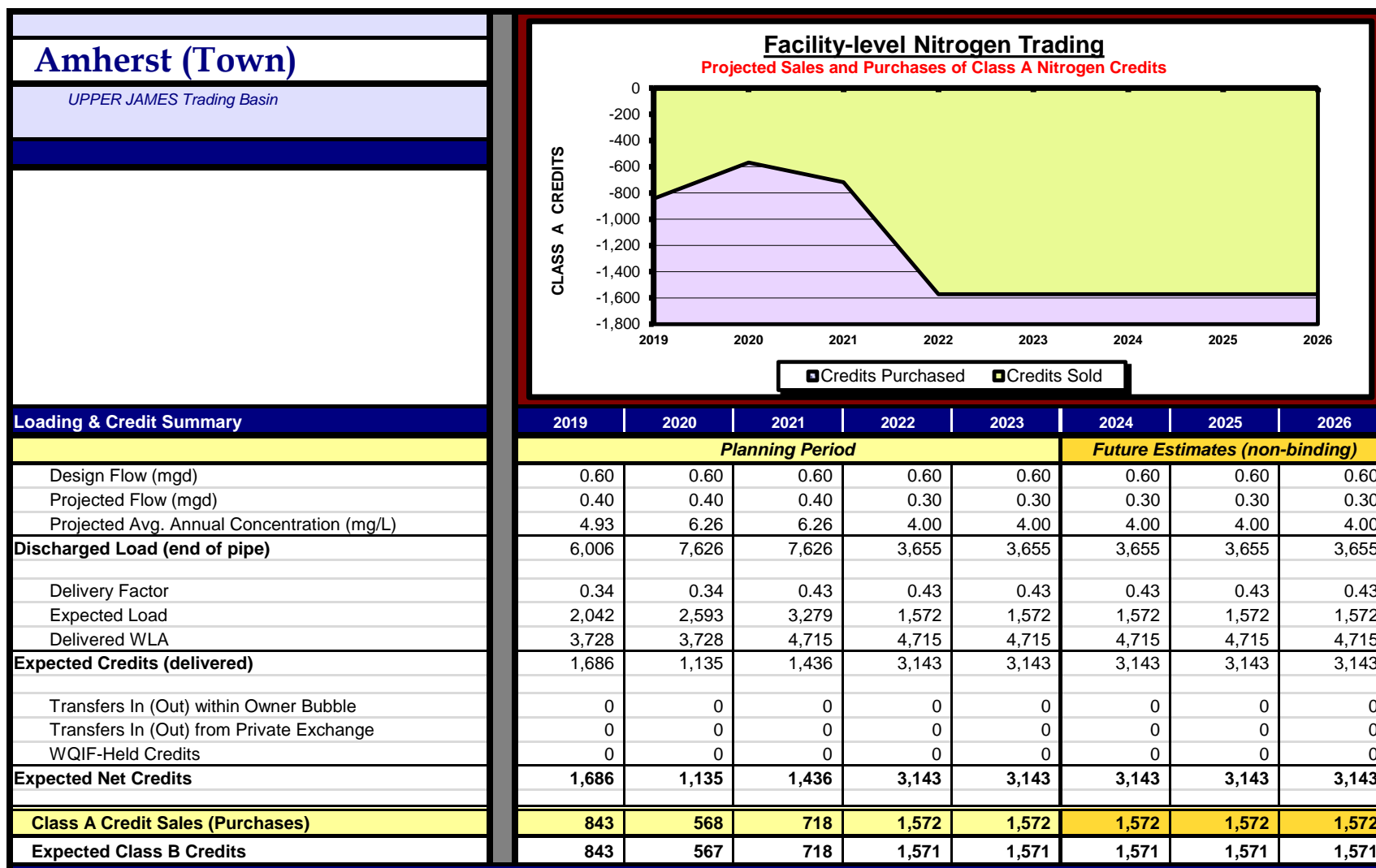
#### ***Compliance Years 2017 through 2020***

- TN:  $0.26 \text{ delivery factor} * 63,957 \text{ discharged pounds} * 25.714\% = 4,276 \text{ delivered pounds}$
- TP:  $0.66 \text{ delivery factor} * 4,323 \text{ discharged pounds} * 25.714\% = 734 \text{ delivered pounds}$

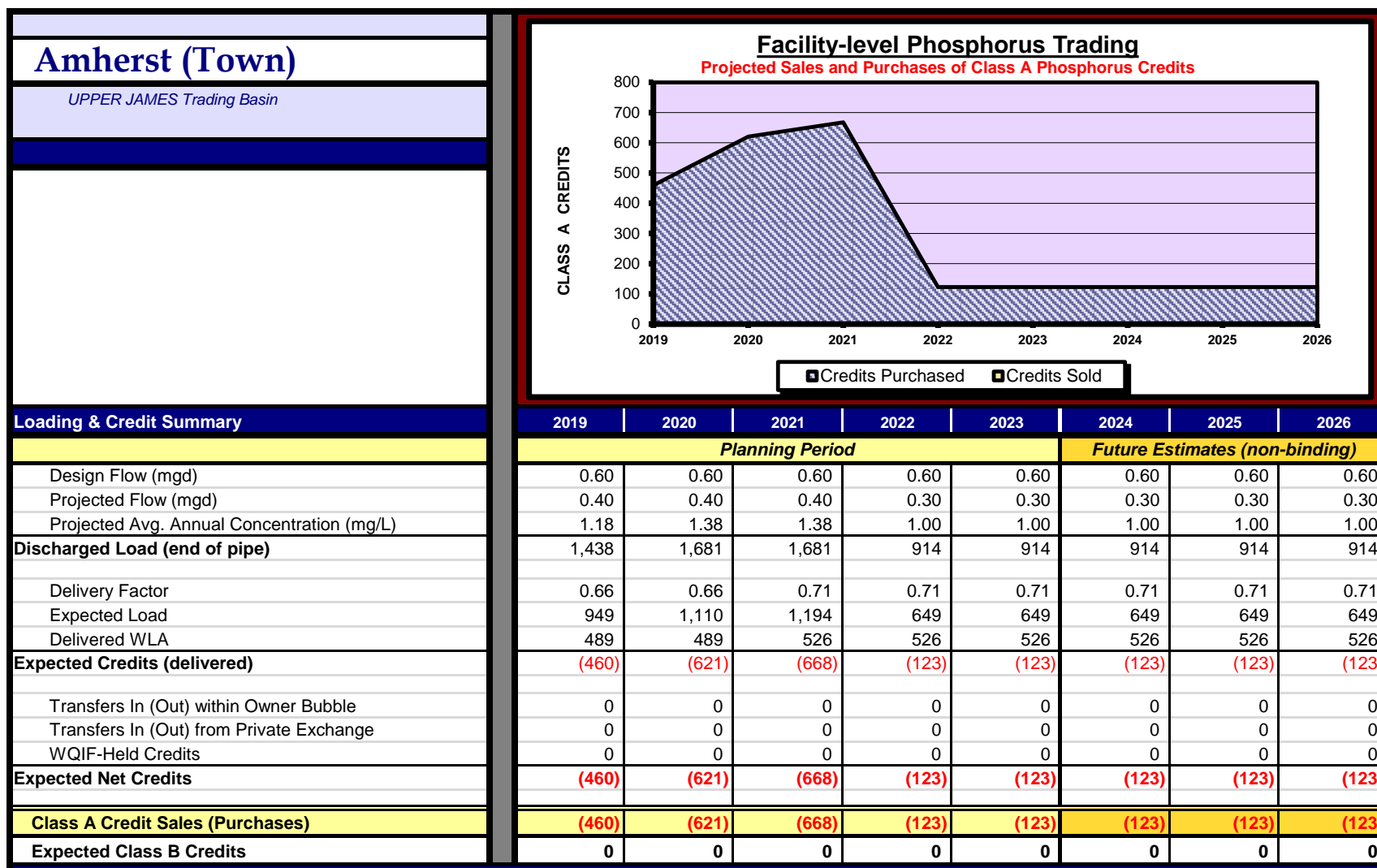
#### ***Compliance Year 2021 and Beyond***

- TN:  $0.27 \text{ delivery factor} * 63,957 \text{ discharged pounds} * 25.714\% = 4,440 \text{ delivered pounds}$
- TP:  $0.71 \text{ delivery factor} * 4,323 \text{ discharged pounds} * 25.714\% = 789 \text{ delivered pounds}$

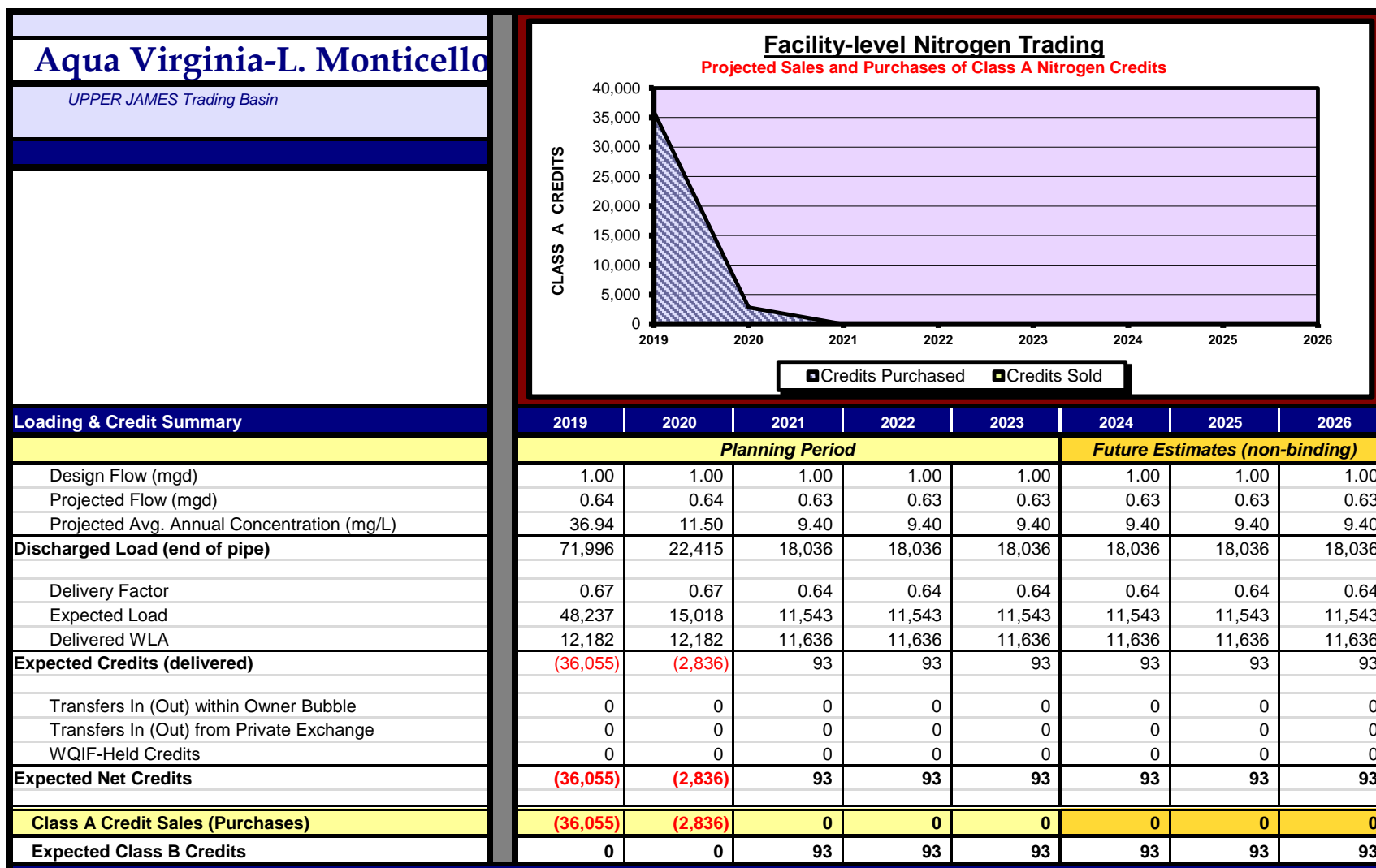
## NITROGEN FACILITY SUMMARY



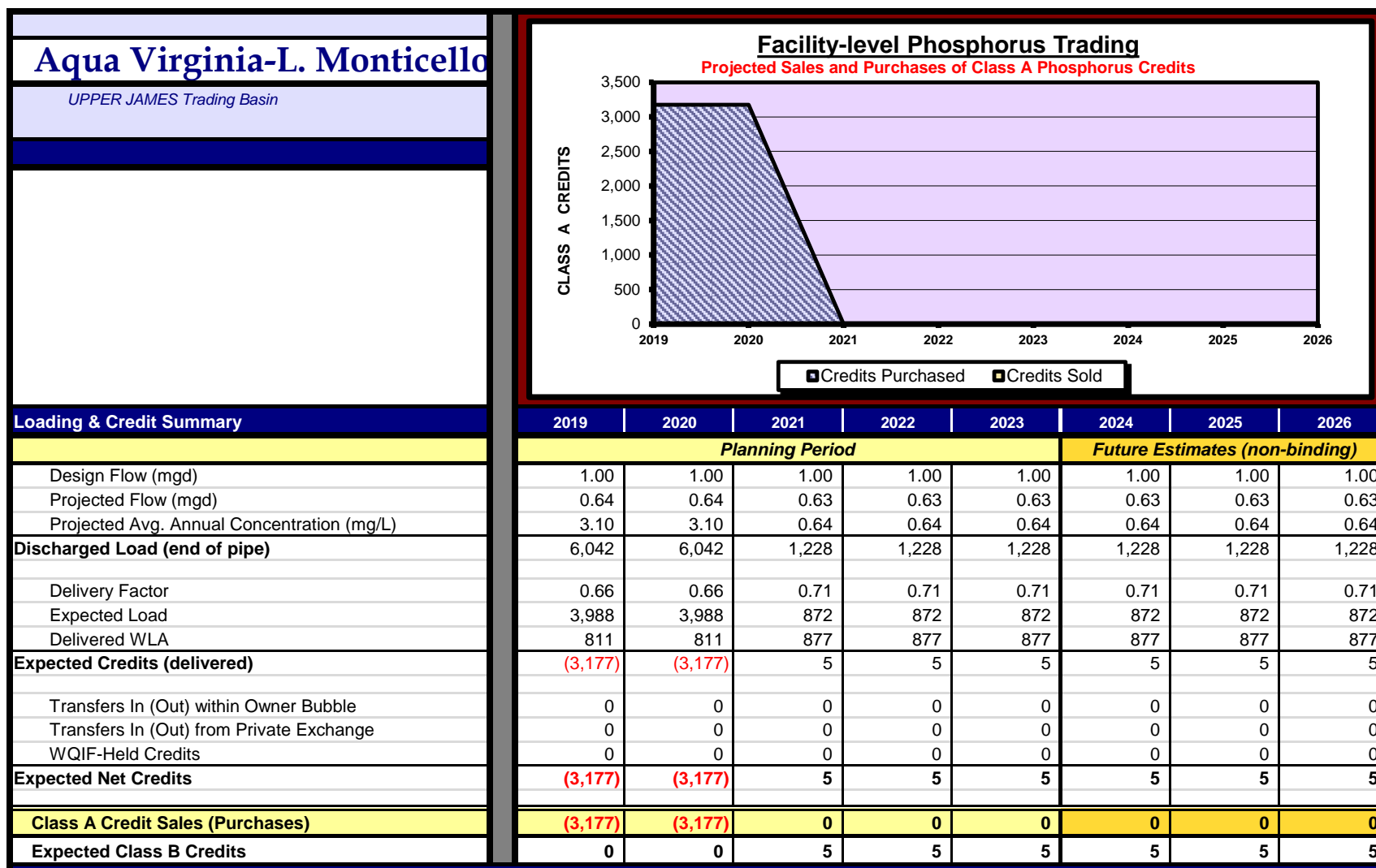
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

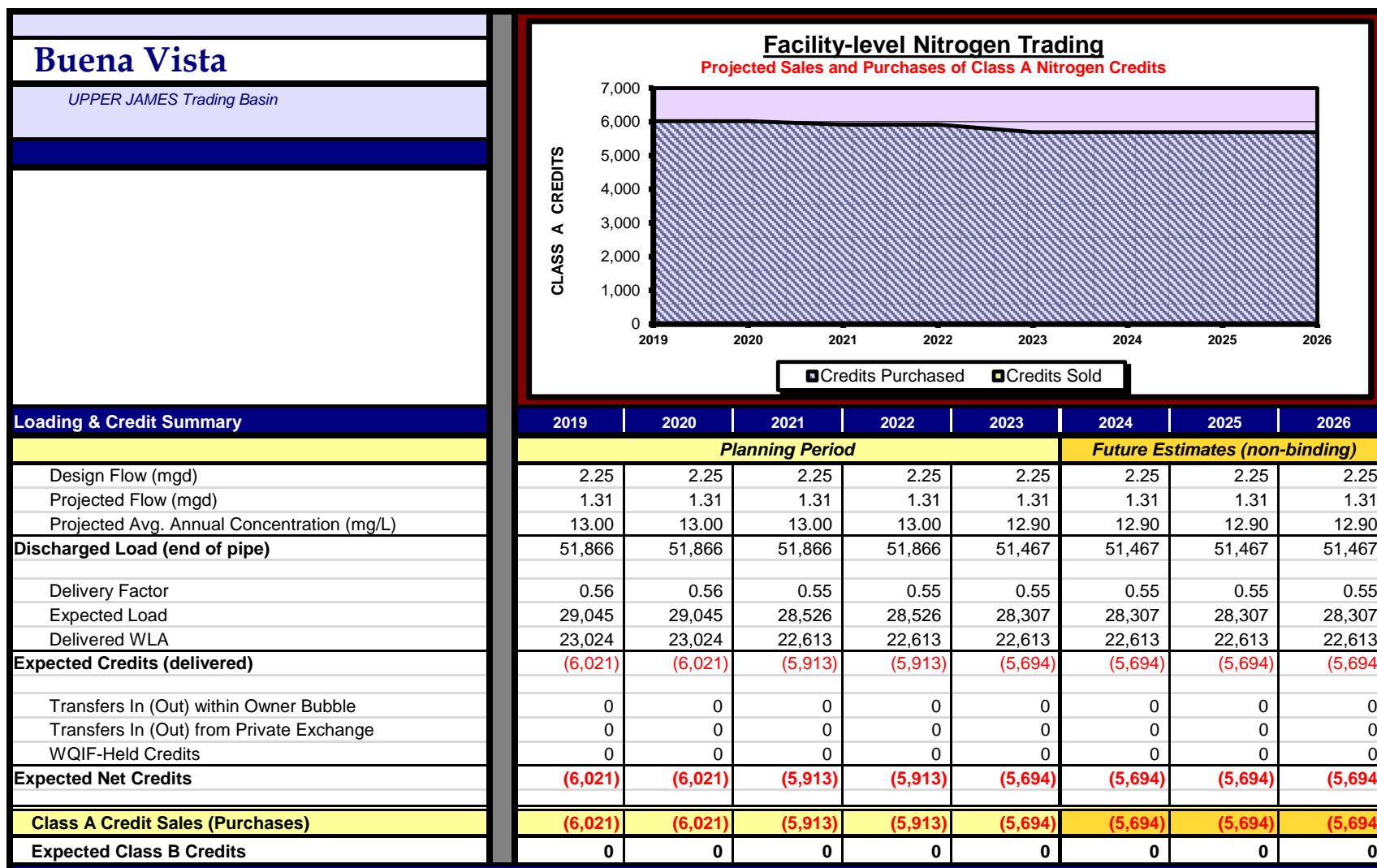


## PHOSPHORUS FACILITY SUMMARY

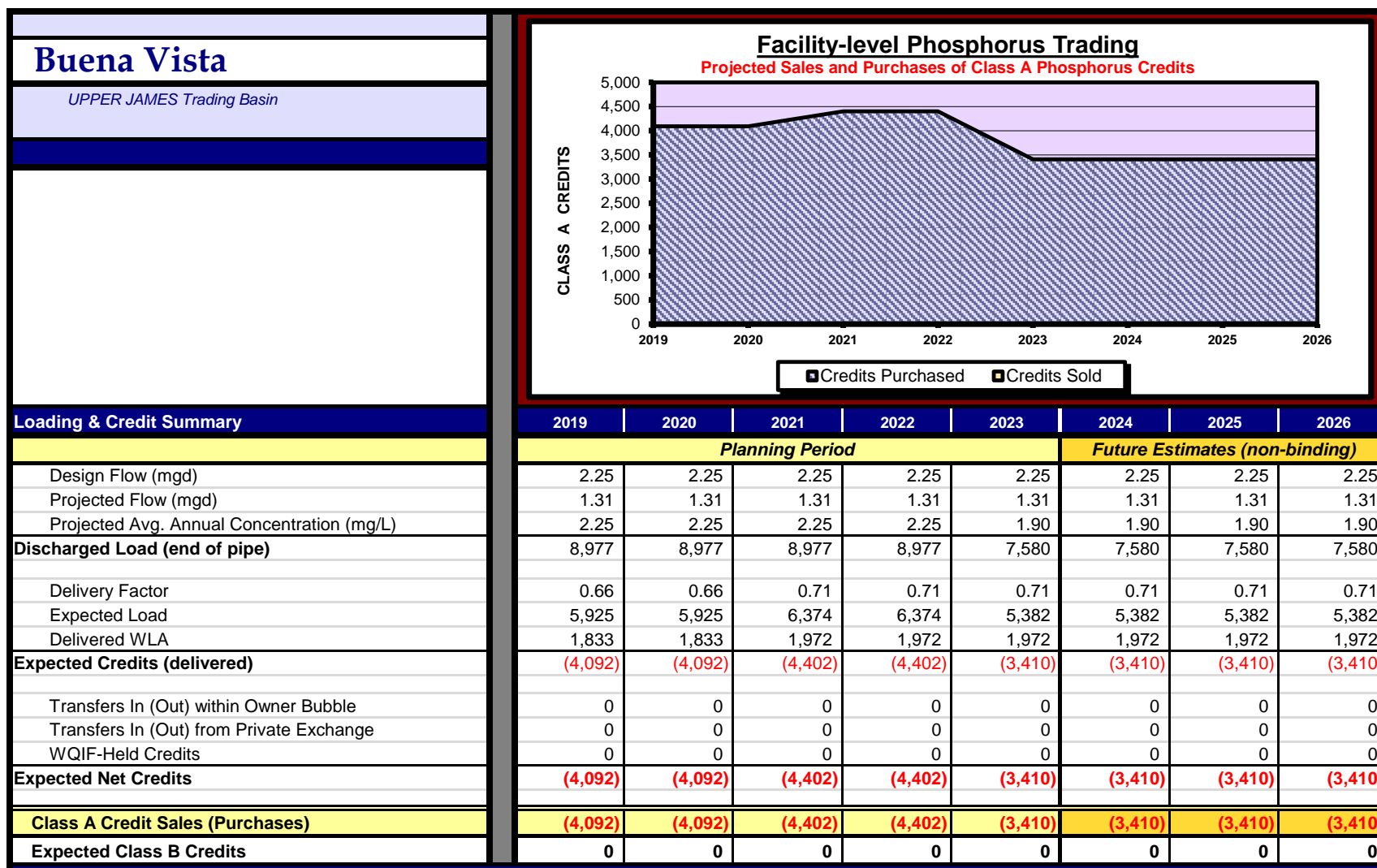




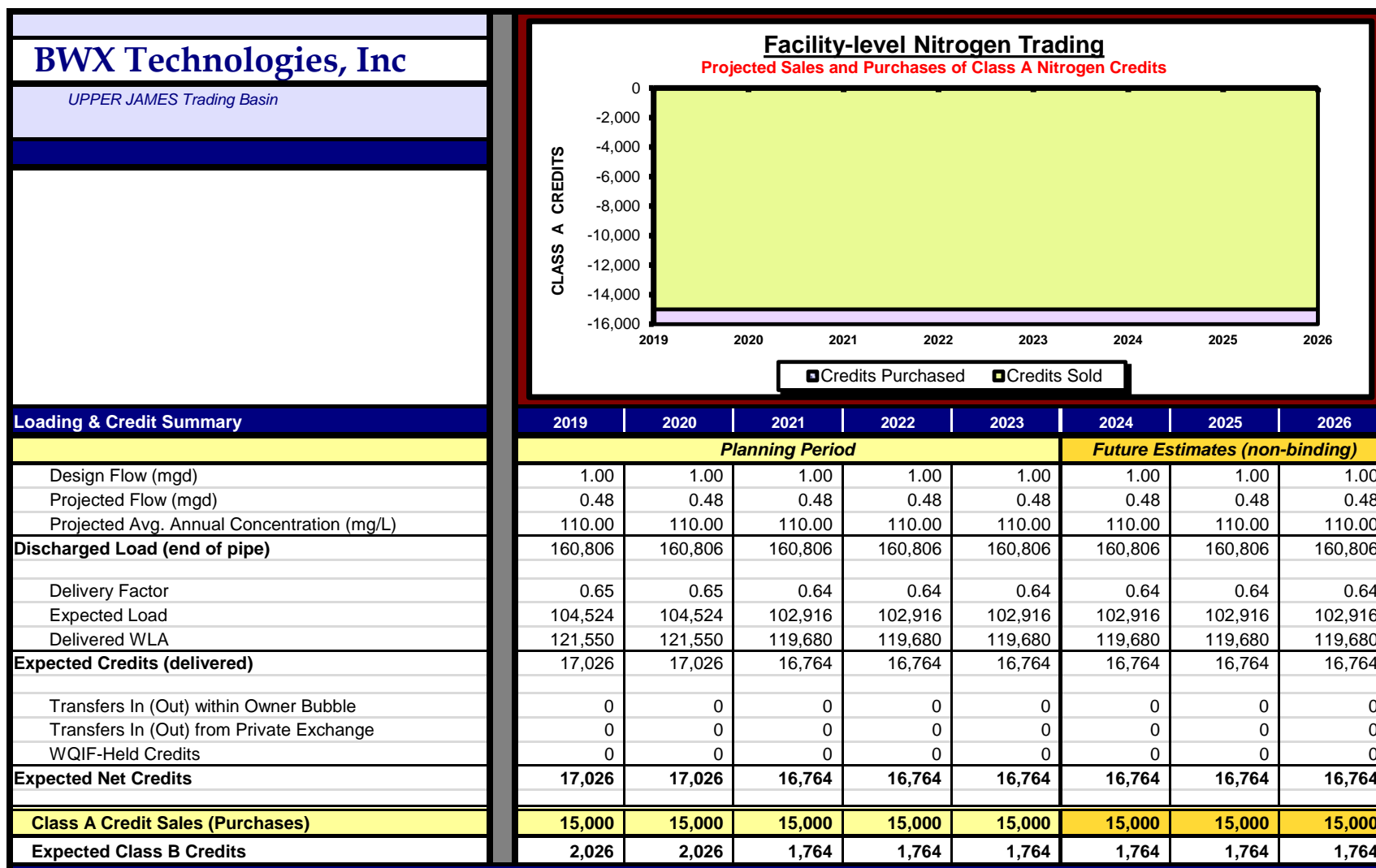
## NITROGEN FACILITY SUMMARY



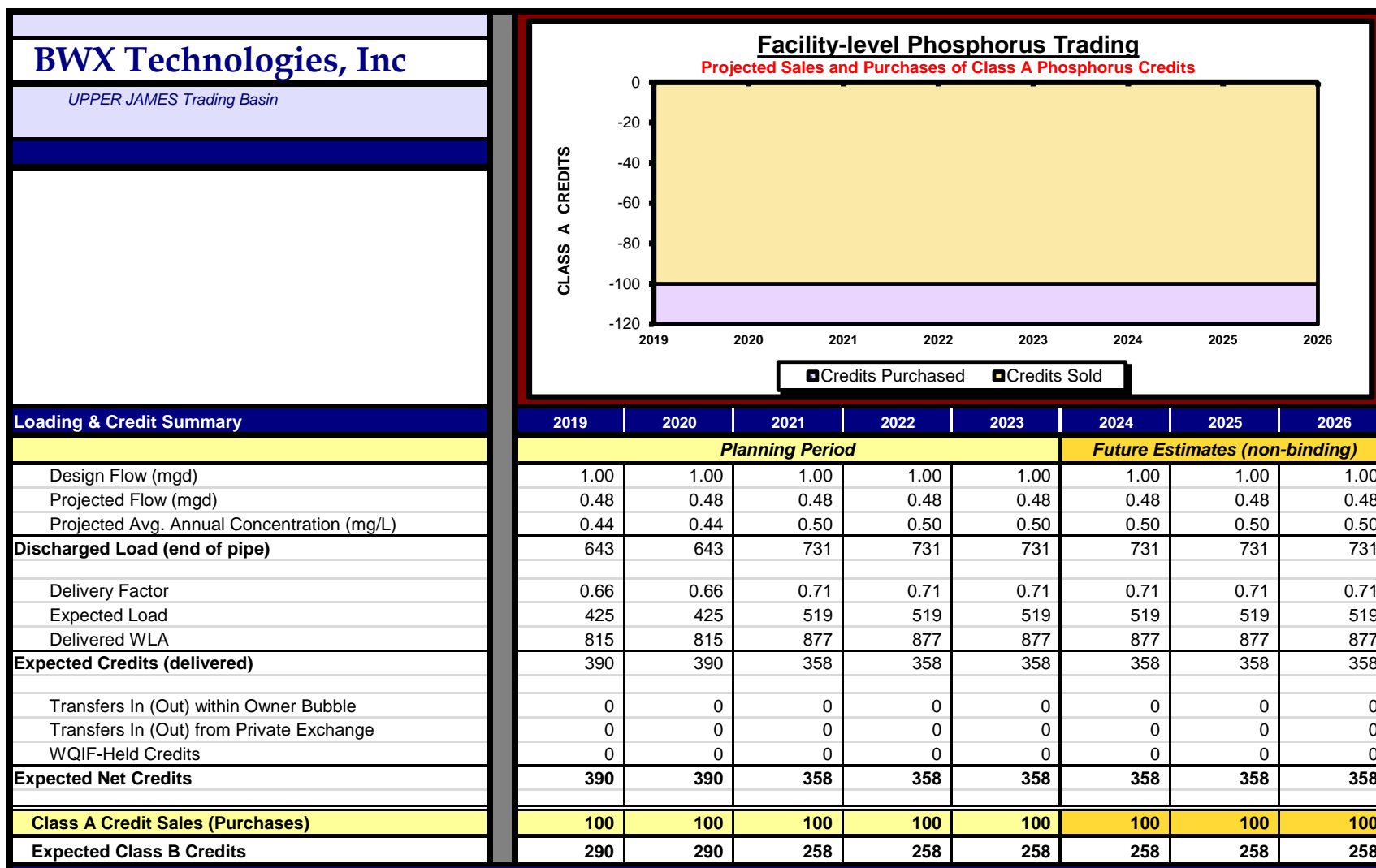
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



## Owner Bubble: Chesterfield County

The facilities listed below have received an aggregated mass load limit pursuant to 9 VAC 25-820-70, Part 1.B.2., which is also referred to as an “owner bubble”. Accordingly, compliance is determined solely on an aggregate basis rather than by comparison of individual facility loads with respective individual WLAs.

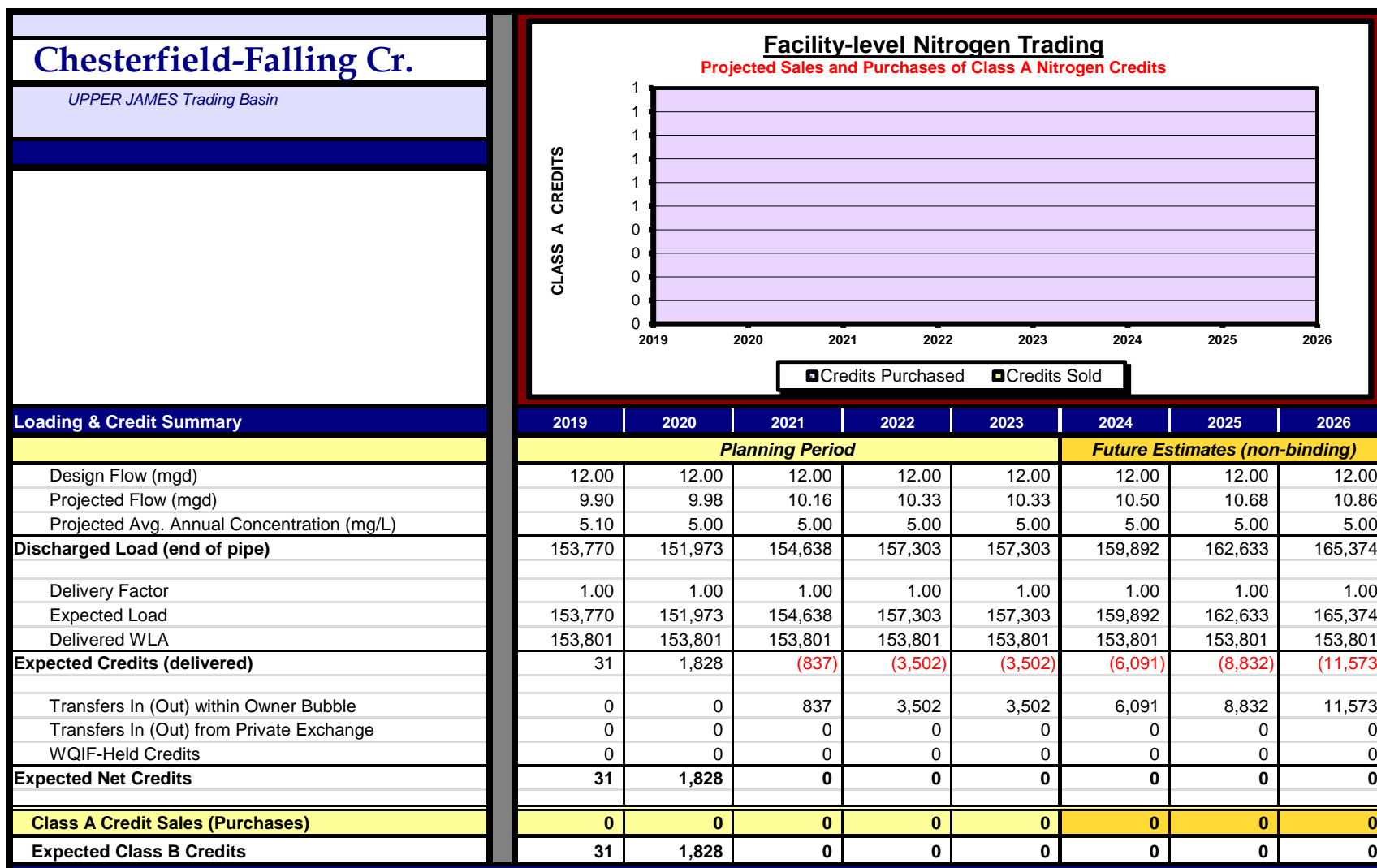
The “Credit Transferred within Bubble” section of each table forecasts the use of Credits within the owner bubble during each Compliance Year, and must necessarily sum to zero. The specific Credit transfers shown in this table are provided for internal planning purposes only and, accordingly, are not binding and may change based on the actual performance of individual facilities within the bubble.

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

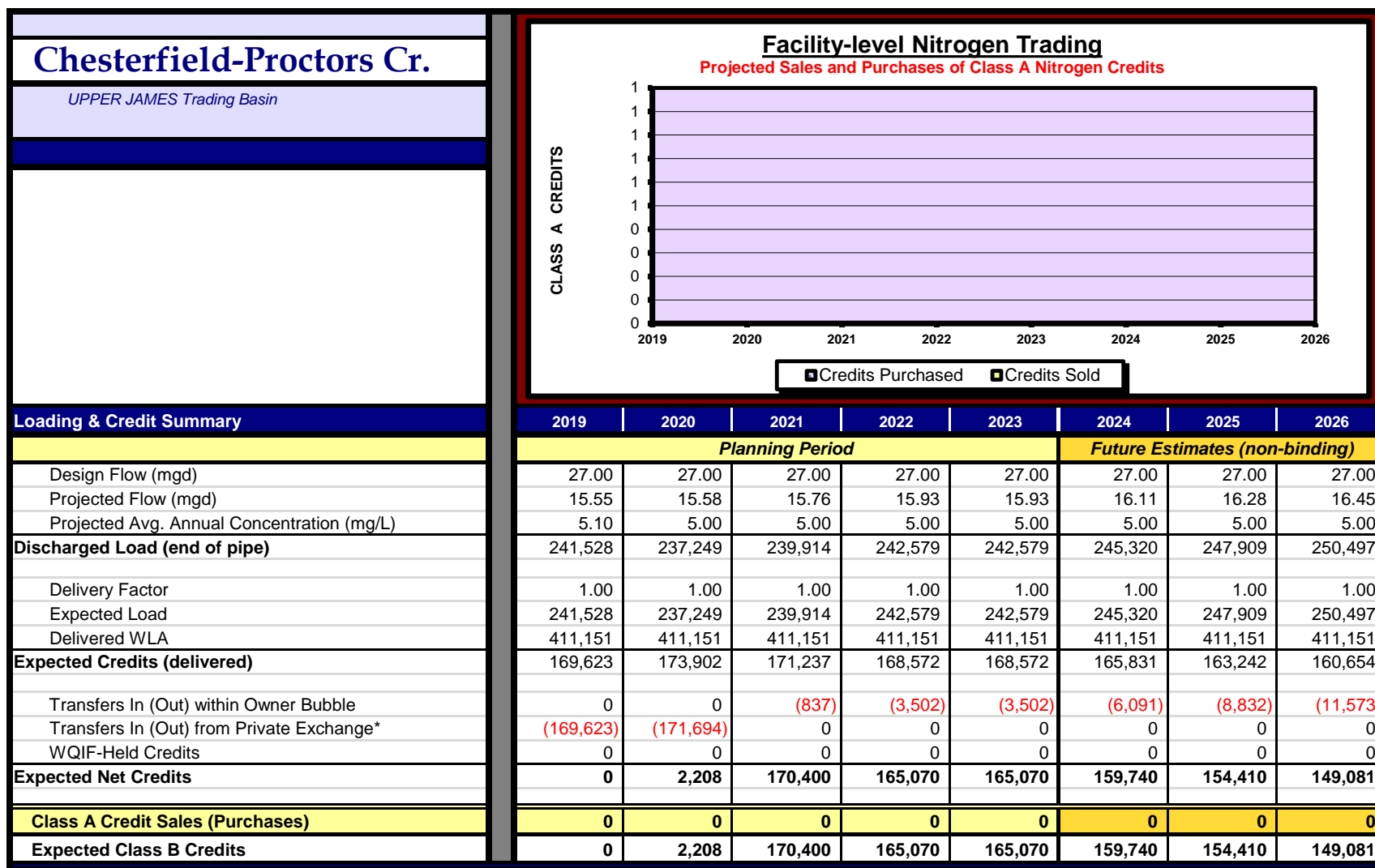
<b>NITROGEN Credits</b>	<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Falling Creek	-	-	837	3,502	3,502	6,091	8,832	11,573
Proctors Creek	-	-	(837)	(3,502)	(3,502)	(6,091)	(8,832)	(11,573)
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>	-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Falling Creek	31	1,828	-	-	-	-	-	-
Proctors Creek	169,623	173,902	170,400	165,070	165,070	159,740	154,410	149,081
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
<b>Expected Credits</b>	<b>169,654</b>	<b>175,730</b>	<b>170,400</b>	<b>165,070</b>	<b>165,070</b>	<b>159,740</b>	<b>154,410</b>	<b>149,081</b>
Private Exchanges	(169,623)	(171,694)	-	-	-	-	-	-
<b>Expected Net Credits</b>	<b>31</b>	<b>4,036</b>	<b>170,400</b>	<b>165,070</b>	<b>165,070</b>	<b>159,740</b>	<b>154,410</b>	<b>149,081</b>
<b>Class A Sales (Purchases)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Expected Class B Credits	31	4,036	170,400	165,070	165,070	159,740	154,410	149,081
WQIF-Held Credits	0	0	0	0	0	0	0	0

<b>PHOSPHORUS Credits</b>	<b>Exchange 5-year Planning Period</b>					<b>Future Projections</b>		
<b>Credits Transferred within Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Falling Creek	4,110	4,244	2,991	3,257	3,257	3,516	3,790	4,064
Proctors Creek	(4,110)	(4,244)	(2,991)	(3,257)	(3,257)	(3,516)	(3,790)	(4,064)
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
<b>TOTAL (must sum to 0)</b>	-	-	-	-	-	-	-	-
<b>Credits Available outside Bubble</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>
Falling Creek	-	-	-	-	-	-	-	-
Proctors Creek	3,187	3,003	3,962	3,403	3,403	2,843	4,763	4,230
	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-
<b>Expected Credits</b>	<b>3,187</b>	<b>3,003</b>	<b>3,962</b>	<b>3,403</b>	<b>3,403</b>	<b>2,843</b>	<b>4,763</b>	<b>4,230</b>
Private Exchanges	(40)	(40)	(40)	(40)	(40)	(40)	(40)	(40)
<b>Expected Net Credits</b>	<b>3,147</b>	<b>2,963</b>	<b>3,922</b>	<b>3,363</b>	<b>3,363</b>	<b>2,803</b>	<b>4,723</b>	<b>4,190</b>
<b>Class A Sales (Purchases)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Expected Class B Credits	3,147	2,963	3,922	3,363	3,363	2,803	4,723	4,190
WQIF-Held Credits	0	0	0	0	0	0	0	0

## NITROGEN FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



\* Represents a Private Exchange of Credits with South Central Wastewater Authority

## PHOSPHORUS FACILITY SUMMARY

Chesterfield-Falling Cr.

UPPER JAMES Trading Basin

Loading & Credit Summary

Design Flow (mgd)		12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
Projected Flow (mgd)		9.90	9.98	10.16	10.33	10.33	10.50	10.68	10.86
Projected Avg. Annual Concentration (mg/L)		0.55	0.55	0.50	0.50	0.50	0.50	0.50	0.50
Discharged Load (end of pipe)		16,583	16,717	15,464	15,730	15,730	15,989	16,263	16,537
Delivery Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load		16,583	16,717	15,464	15,730	15,730	15,989	16,263	16,537
Delivered WLA		12,473	12,473	12,473	12,473	12,473	12,473	12,473	12,473
Expected Credits (delivered)		(4,110)	(4,244)	(2,991)	(3,257)	(3,257)	(3,516)	(3,790)	(4,064)
Transfers In (Out) within Owner Bubble		4,110	4,244	2,991	3,257	3,257	3,516	3,790	4,064
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		0	0	0	0	0	0	0	0
Class A Credit Sales (Purchases)		0	0	0	0	0	0	0	0
Expected Class B Credits		0	0	0	0	0	0	0	0

Facility-level Phosphorus Trading

Projected Sales and Purchases of Class A Phosphorus Credits

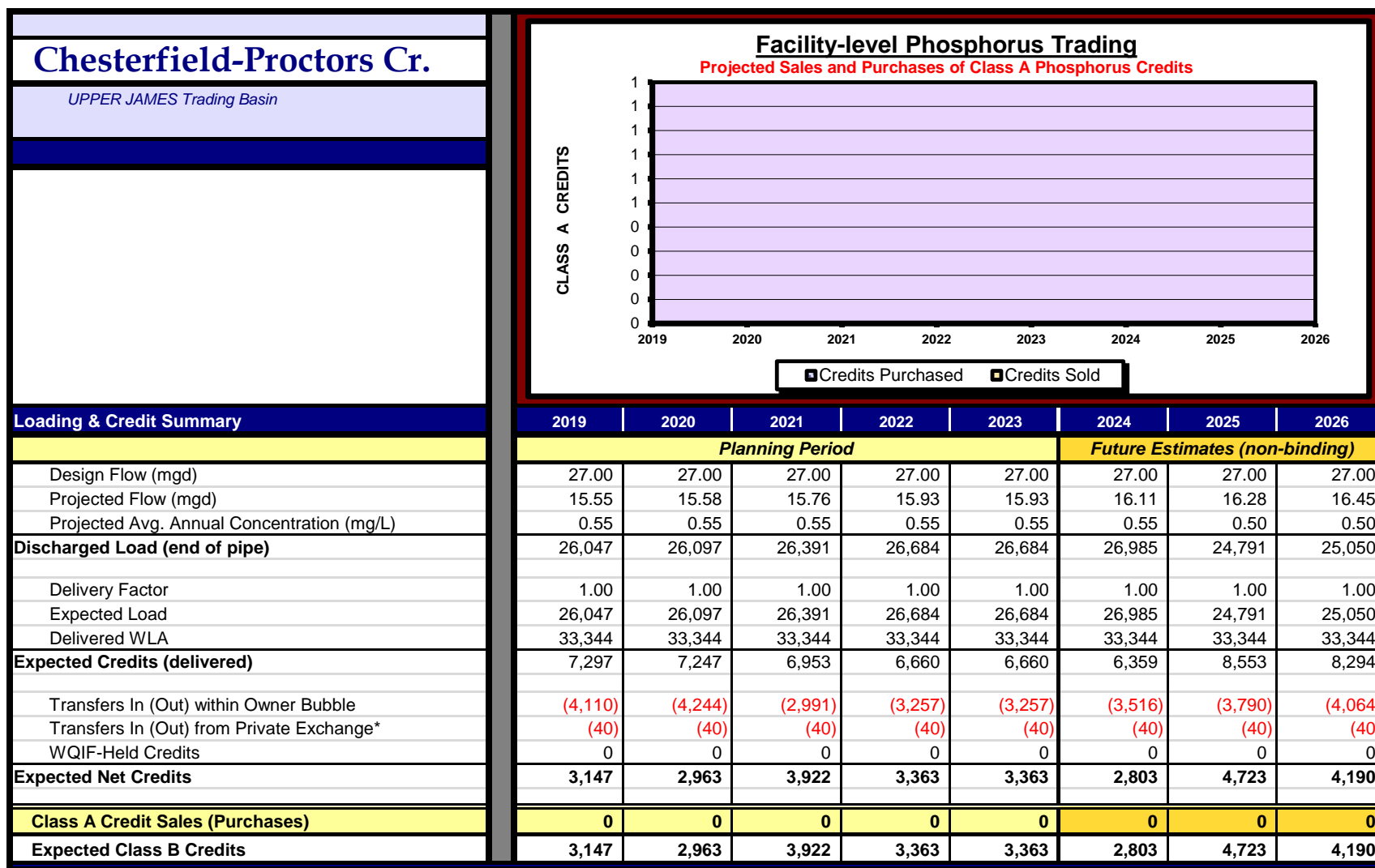
CLASS A CREDITS

Credits Purchased

Credits Sold



## PHOSPHORUS FACILITY SUMMARY



\* Represents a Private Exchange of Credits with Dominion-Chesterfield

## NITROGEN FACILITY SUMMARY

Covington								
UPPER JAMES Trading Basin								
<b>Loading &amp; Credit Summary</b>								
Design Flow (mgd)	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Projected Flow (mgd)	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Projected Avg. Annual Concentration (mg/L)	13.72	13.72	13.72	13.72	13.72	13.72	13.72	13.72
<b>Discharged Load (end of pipe)</b>	87,749	87,749	87,749	87,749	87,749	87,749	87,749	87,749
Delivery Factor	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Expected Load	18,427	18,427	18,427	18,427	18,427	18,427	18,427	18,427
Delivered WLA	11,512	11,512	11,512	11,512	11,512	11,512	11,512	11,512
<b>Expected Credits (delivered)</b>	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
<b>Expected Net Credits</b>	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)
<b>Class A Credit Sales (Purchases)</b>	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)	(6,915)
<b>Expected Class B Credits</b>	0	0	0	0	0	0	0	0

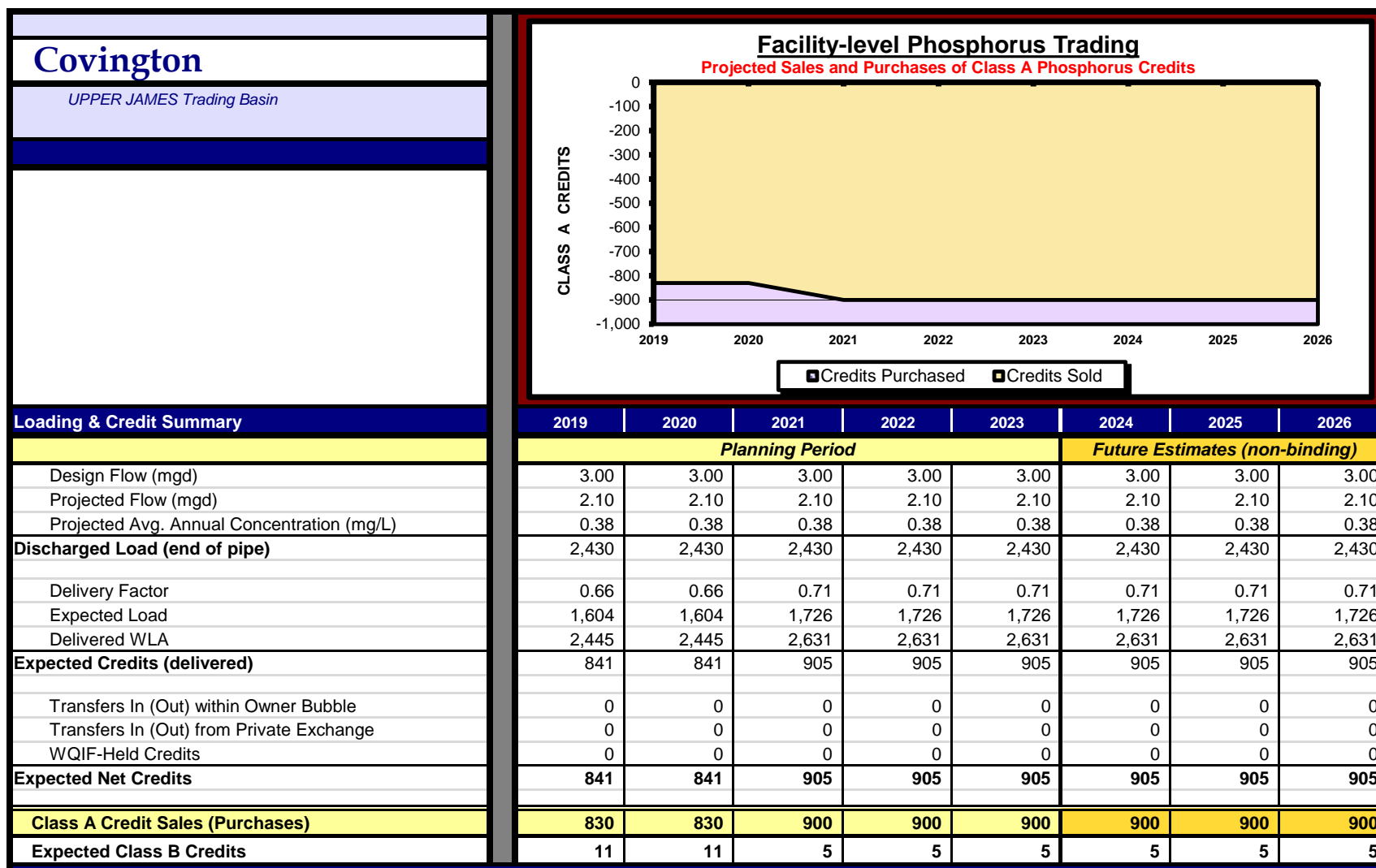
  

**Facility-level Nitrogen Trading**  
**Projected Sales and Purchases of Class A Nitrogen Credits**

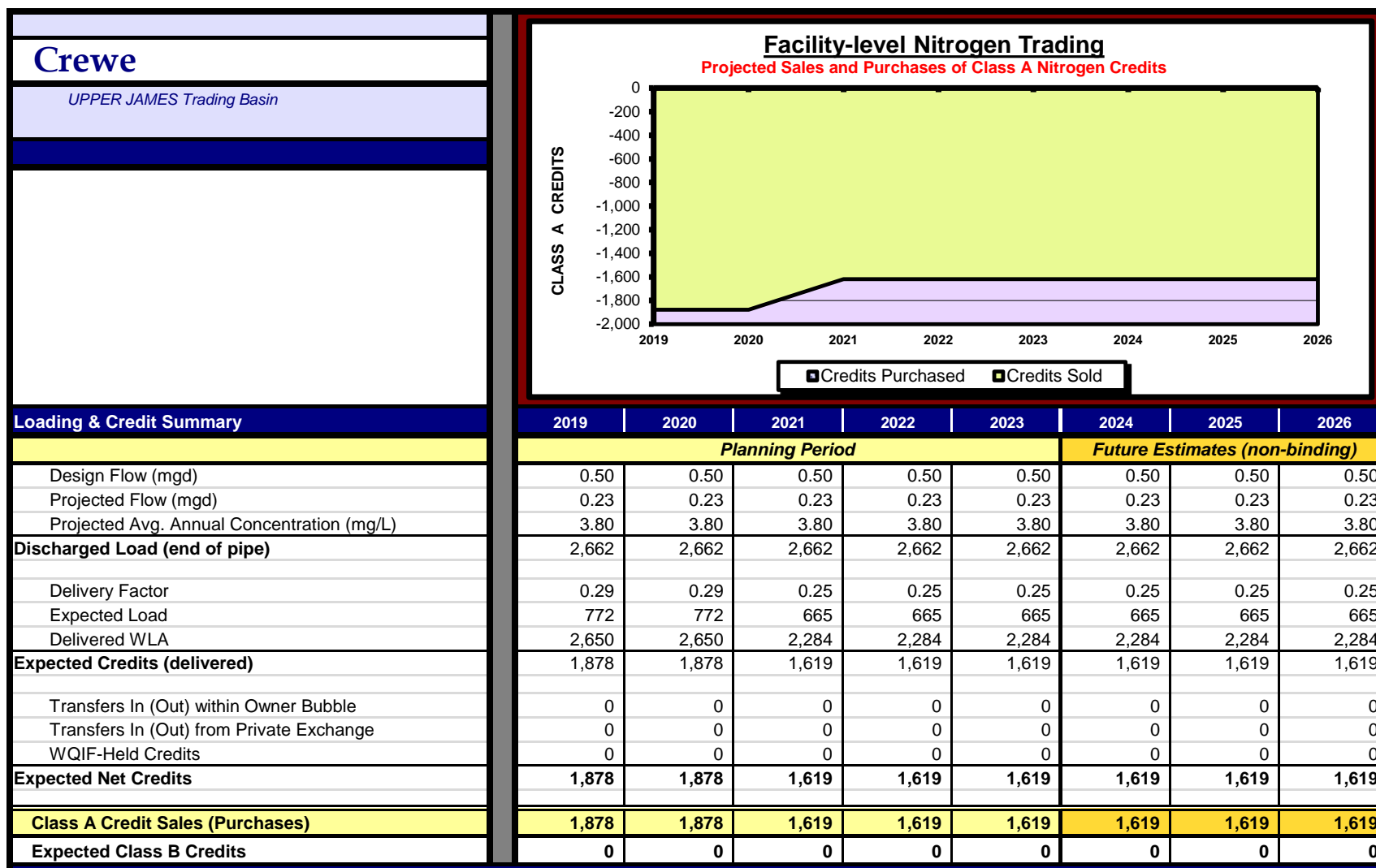
CLASS A CREDITS

Credits Purchased   Credits Sold

## PHOSPHORUS FACILITY SUMMARY



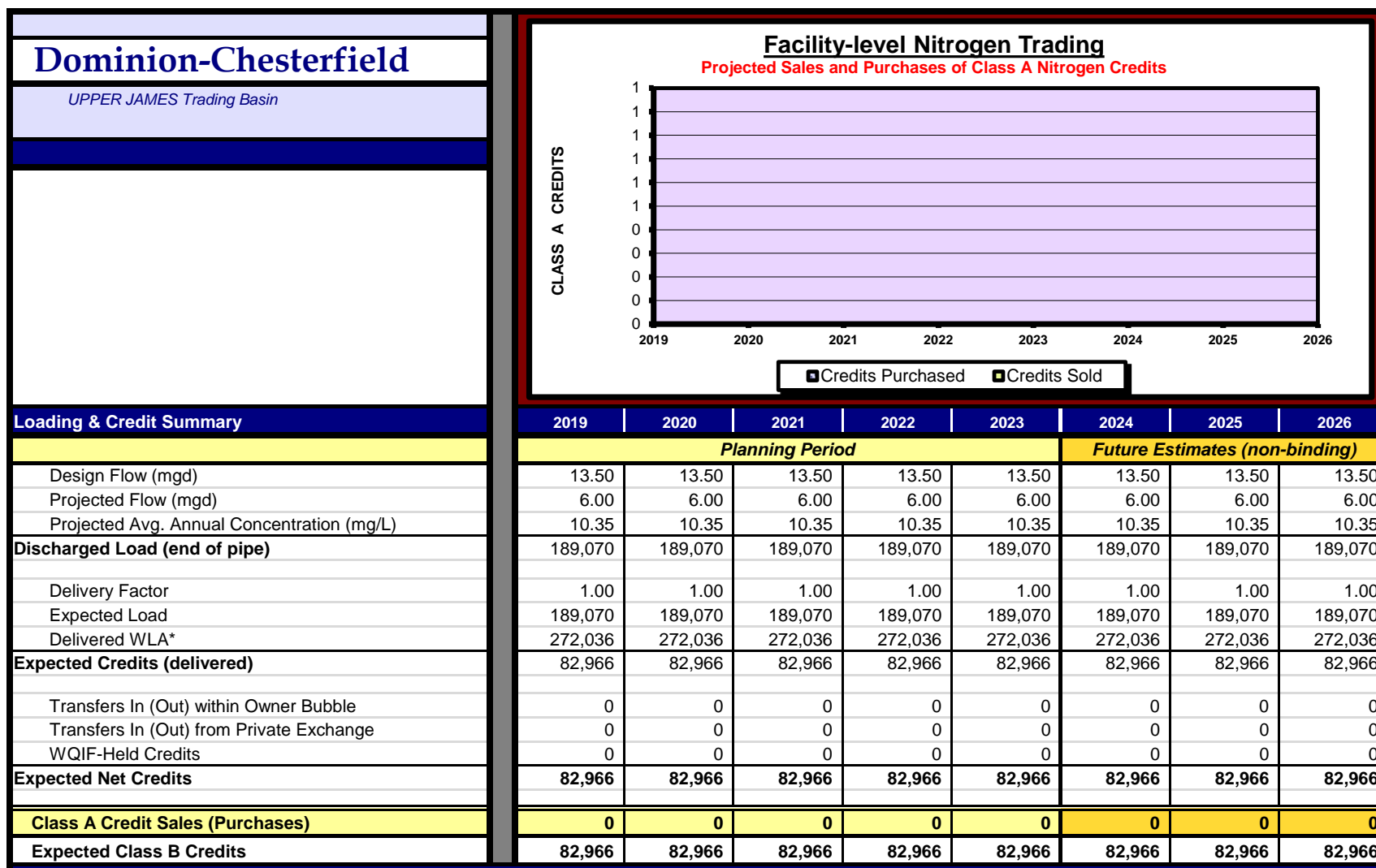
## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

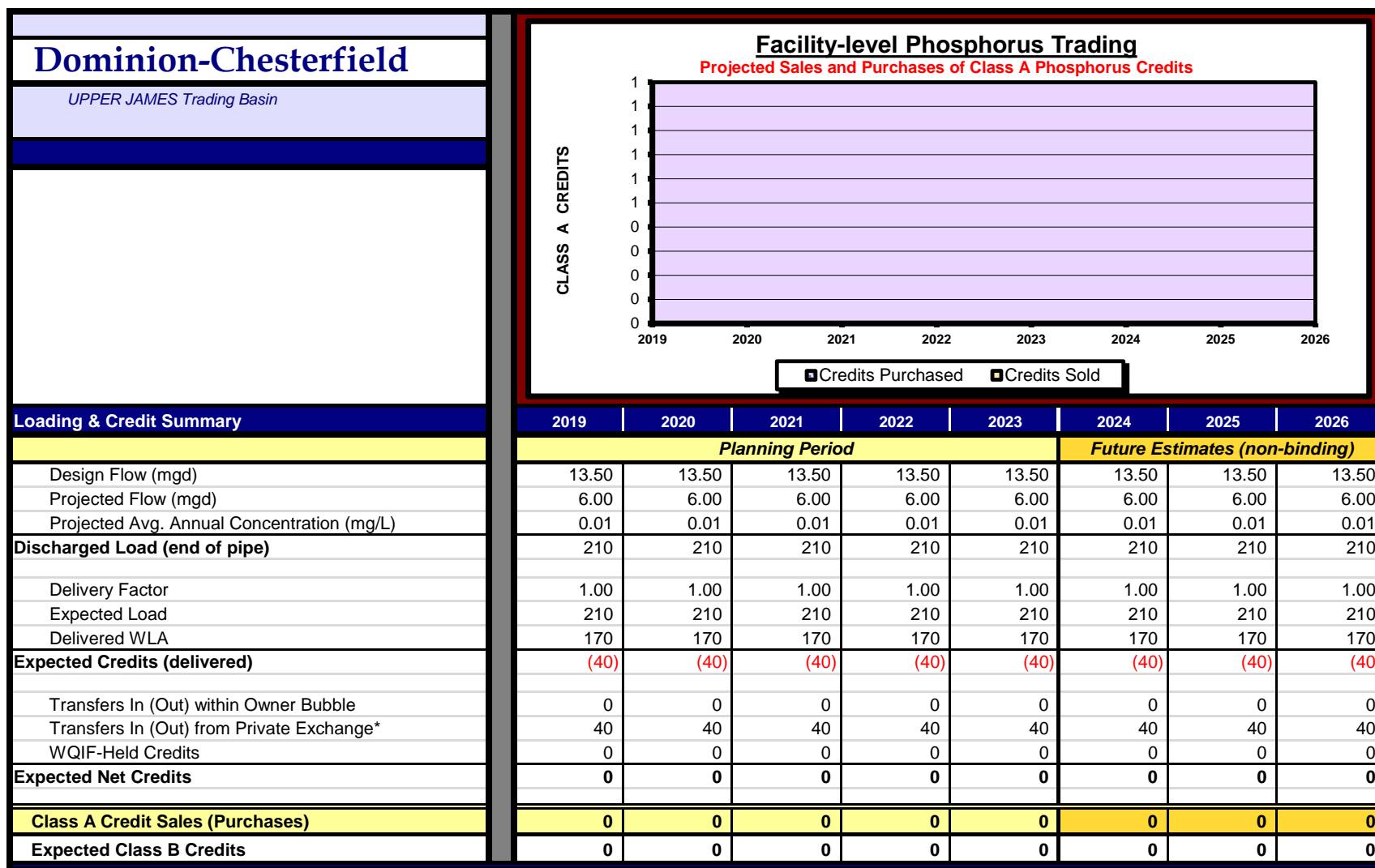
Crewe	
UPPER JAMES Trading Basin	

## NITROGEN FACILITY SUMMARY



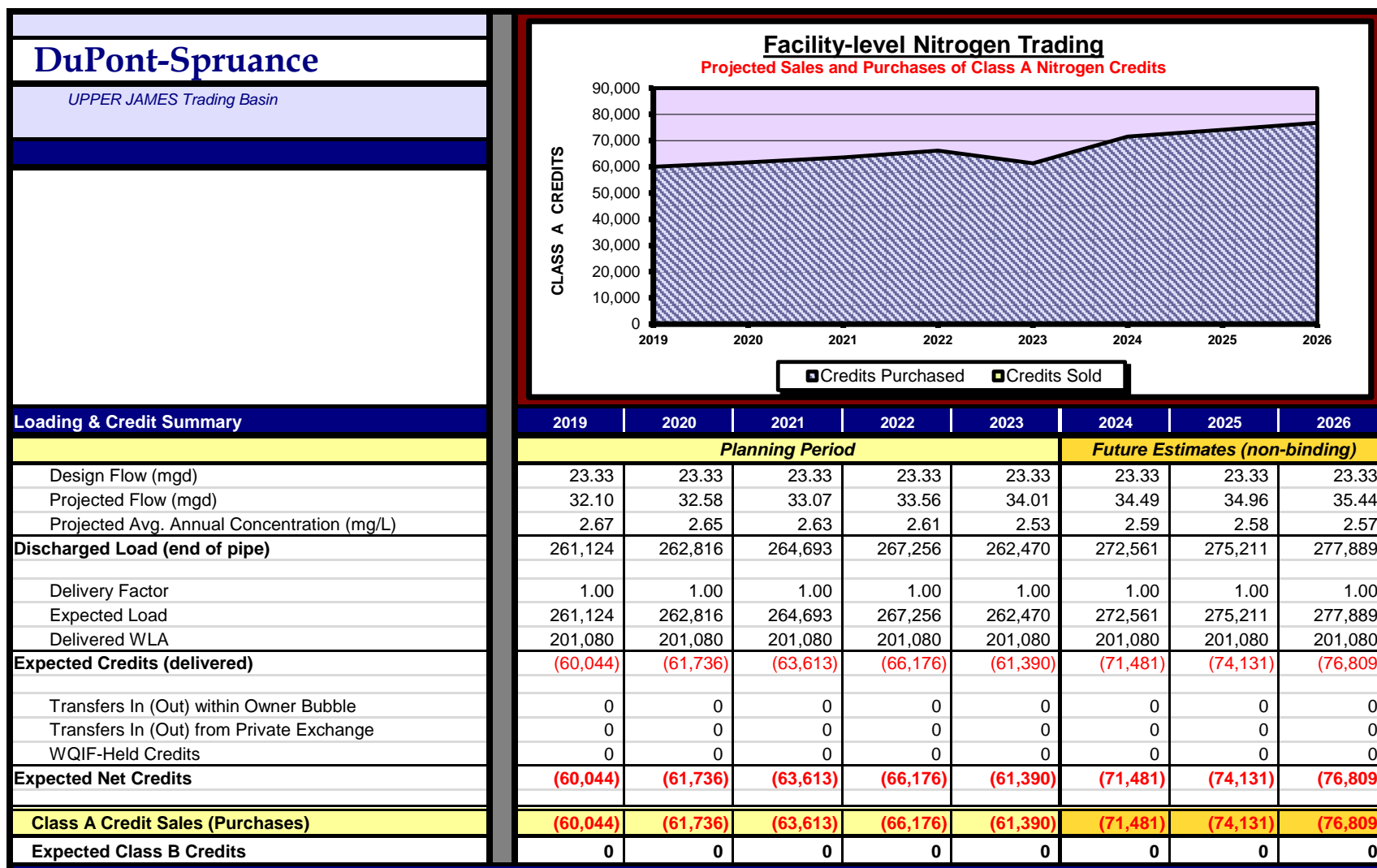
\* Reflects a permanent allocation transfer to Tranlin, Inc of 80,000 delivered pounds of nitrogen

## PHOSPHORUS FACILITY SUMMARY



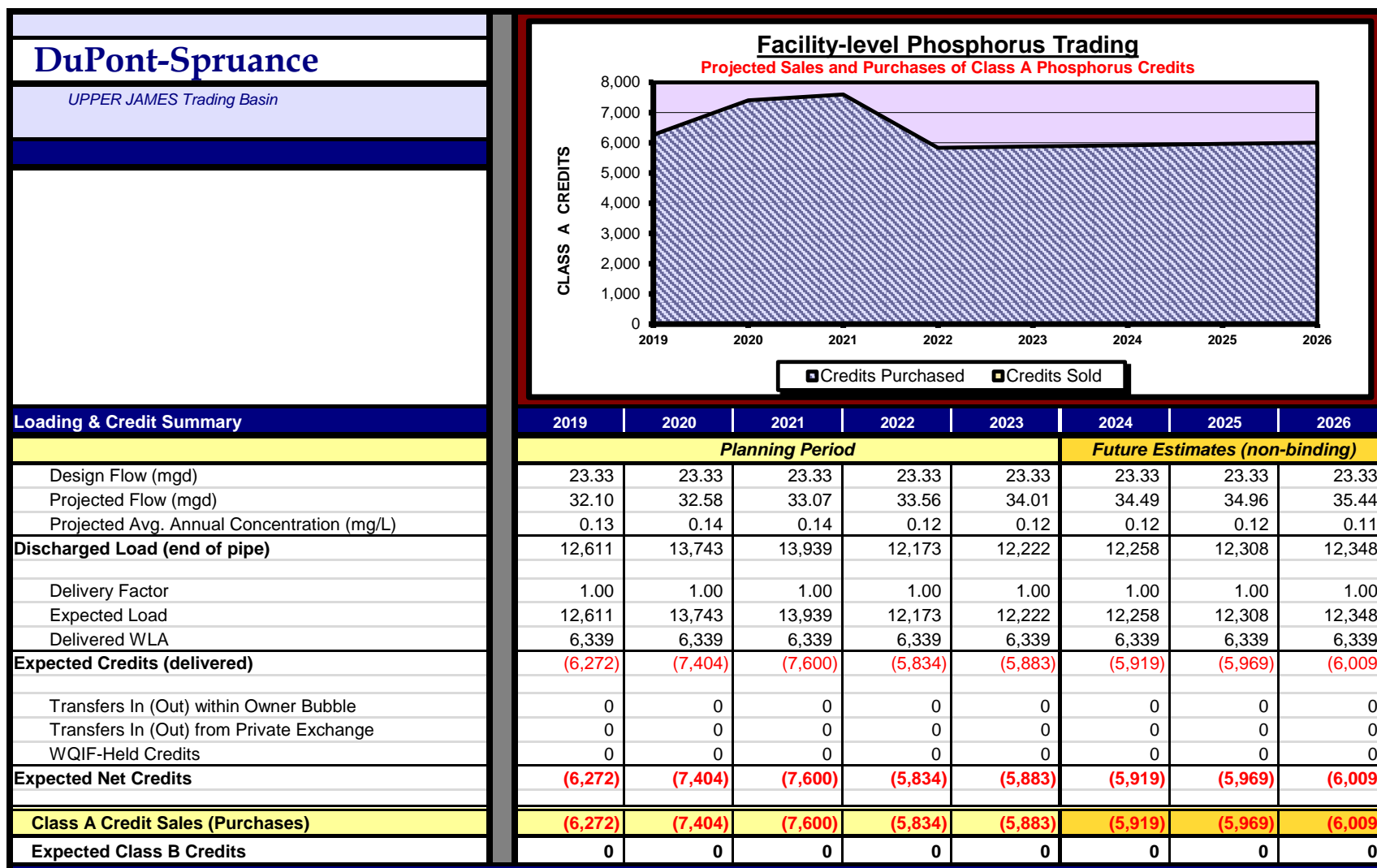
\* Represents a Private Exchange of Credits with Chesterfield County

## NITROGEN FACILITY SUMMARY

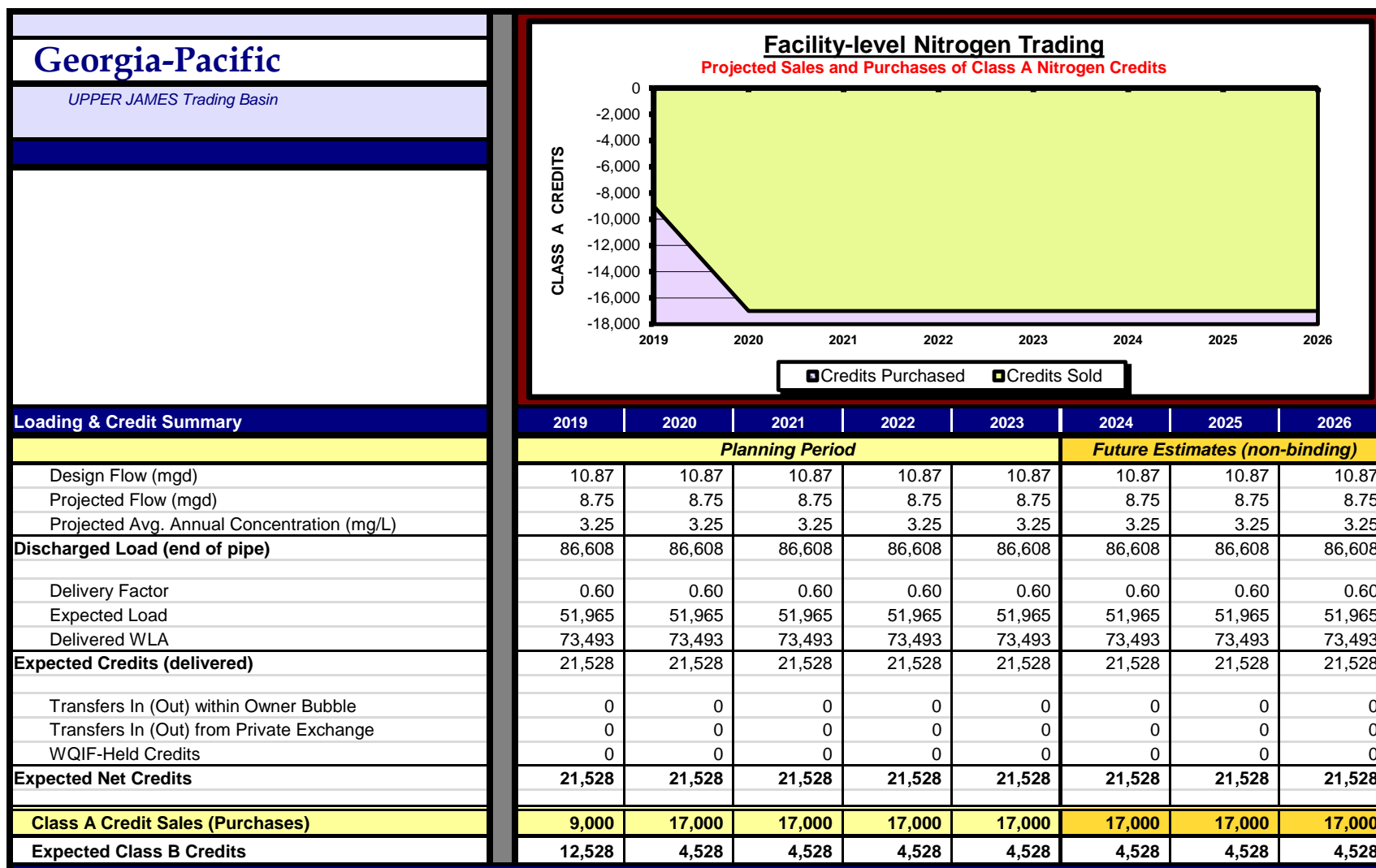




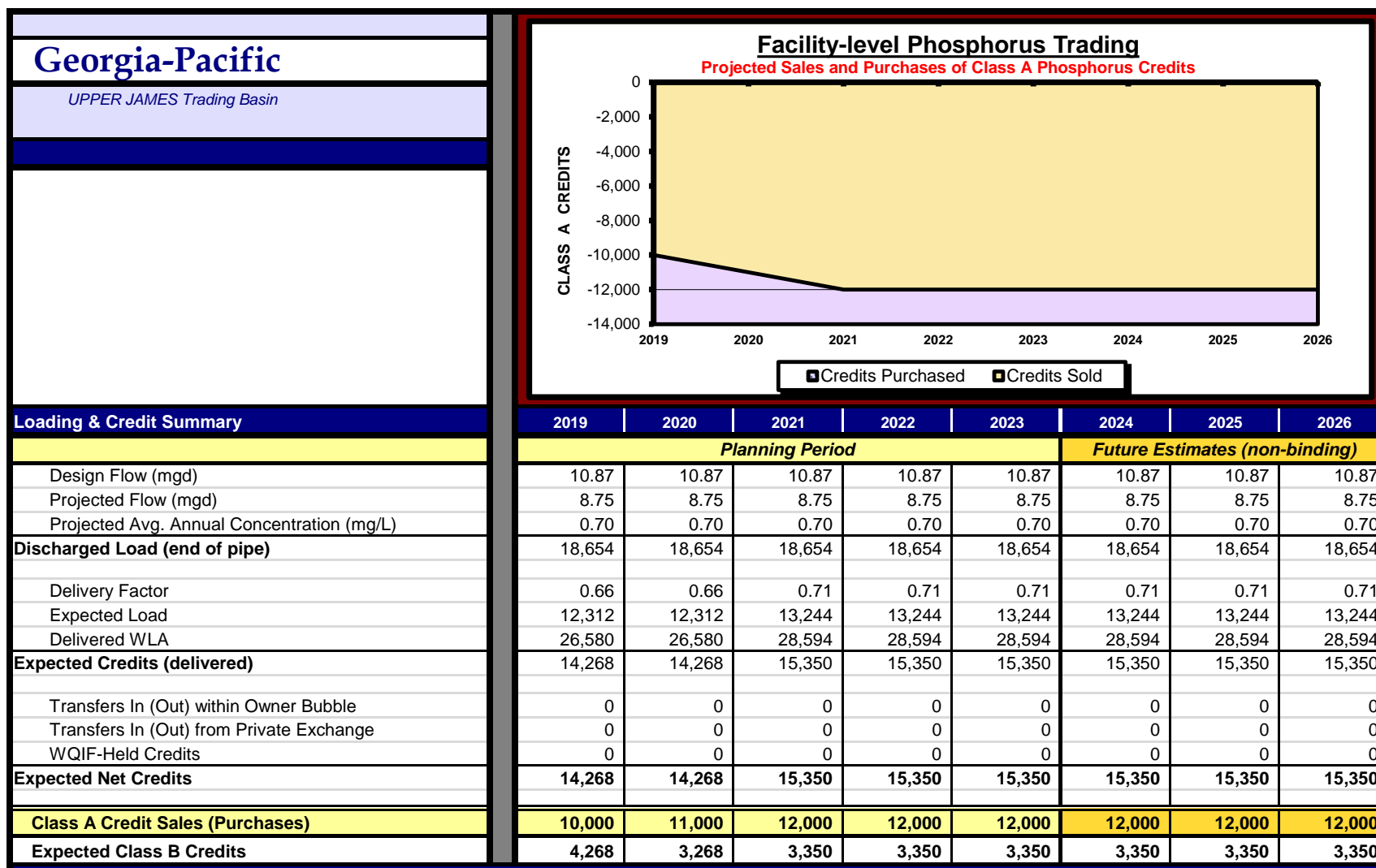
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



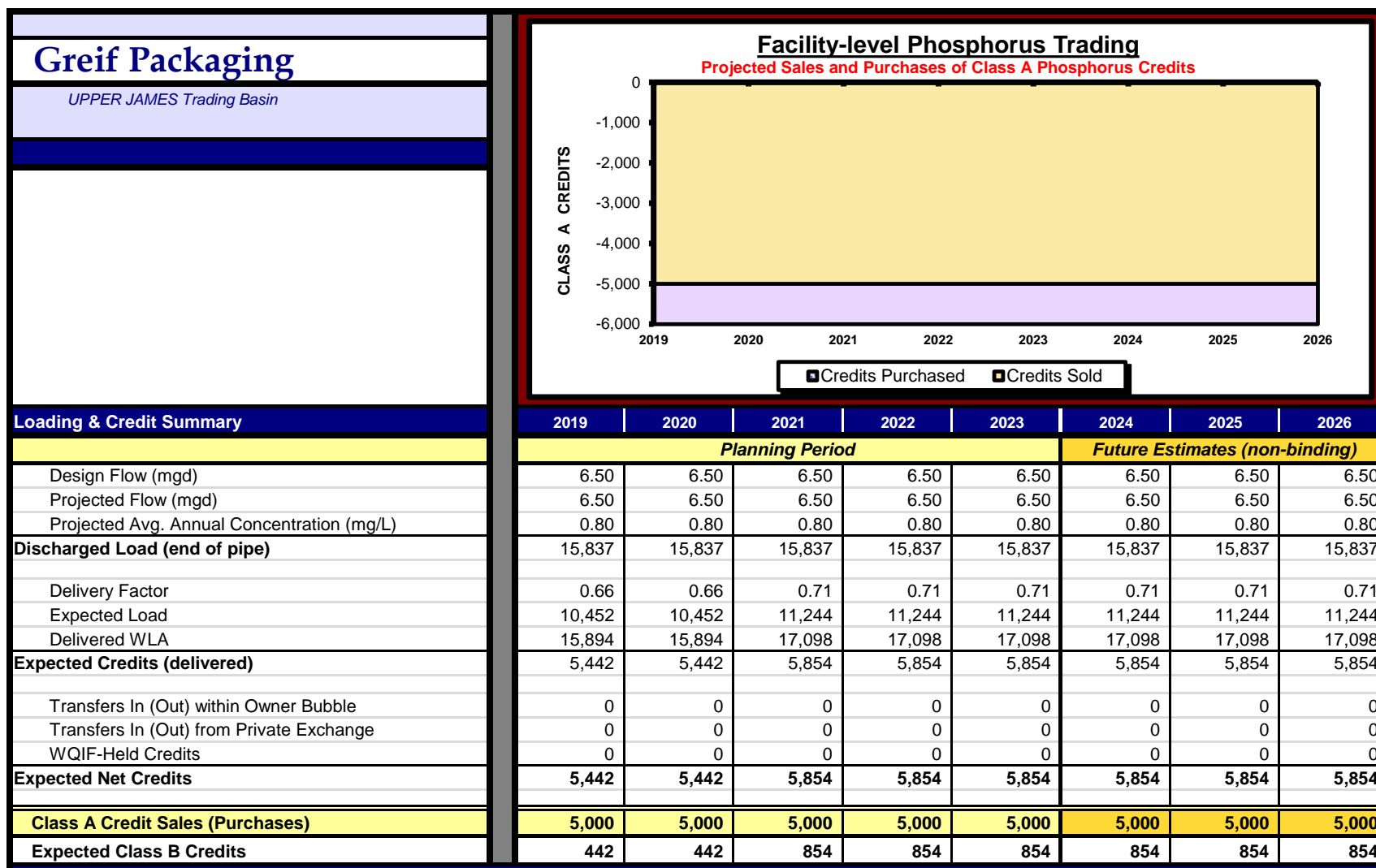
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

[illegible]

## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

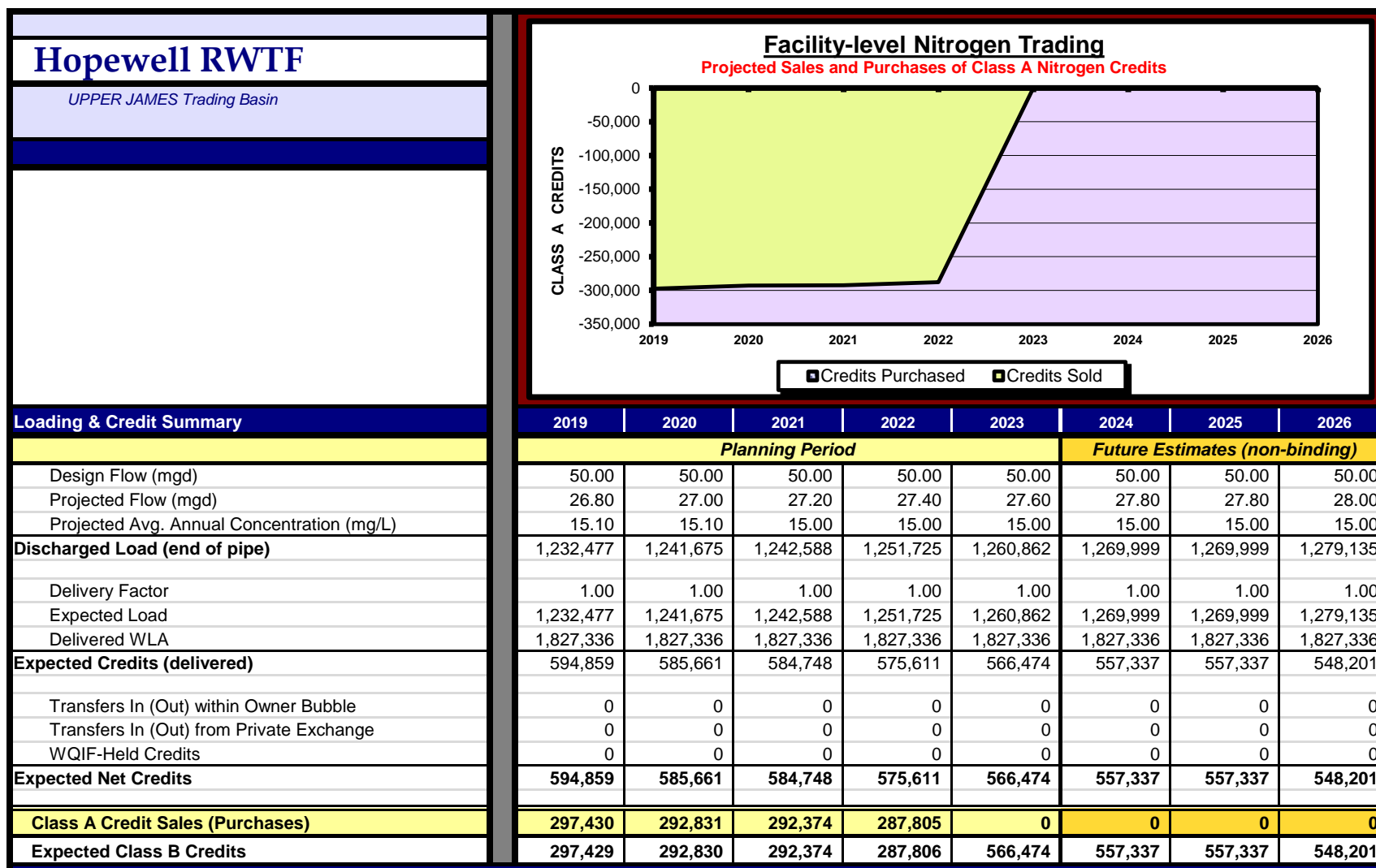
<div>Henrico Co</div> <div>UPPER JAMES Trading Basin</div>		<div>Facility-level Nitrogen Trading</div> <div>Projected Sales and Purchases of Class A Nitrogen Credits</div> <table><caption>Data for Facility-level Nitrogen Trading Chart</caption><tr><th>Year</th><th>Credits Sold</th><th>Credits Purchased</th></tr><tr><td>2019</td><td>-272,252</td><td>30,251</td></tr><tr><td>2020</td><td>-249,555</td><td>27,728</td></tr><tr><td>2021</td><td>-226,185</td><td>25,132</td></tr><tr><td>2022</td><td>-202,144</td><td>22,460</td></tr><tr><td>2023</td><td>-177,431</td><td>19,714</td></tr><tr><td>2024</td><td>-151,912</td><td>16,879</td></tr><tr><td>2025</td><td>-125,587</td><td>13,954</td></tr><tr><td>2026</td><td>-98,591</td><td>10,955</td></tr></table>								Year	Credits Sold	Credits Purchased	2019	-272,252	30,251	2020	-249,555	27,728	2021	-226,185	25,132	2022	-202,144	22,460	2023	-177,431	19,714	2024	-151,912	16,879	2025	-125,587	13,954	2026	-98,591	10,955
		Year	Credits Sold	Credits Purchased																																
		2019	-272,252	30,251																																
		2020	-249,555	27,728																																
2021	-226,185	25,132																																		
2022	-202,144	22,460																																		
2023	-177,431	19,714																																		
2024	-151,912	16,879																																		
2025	-125,587	13,954																																		
2026	-98,591	10,955																																		
Loading & Credit Summary																																				
Design Flow (mgd)		2019	2020	2021	2022	2023	2024	2025	2026																											
Projected Flow (mgd)		Planning Period					Future Estimates (non-binding)																													
Projected Avg. Annual Concentration (mg/L)		75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00																											
Discharged Load (end of pipe)		56.26	57.95	59.69	61.48	63.32	65.22	67.18	69.19																											
		4.90	4.90	4.90	4.90	4.90	4.90	4.90	4.90																											
Delivery Factor		839,582	864,802	890,768	917,481	944,940	973,294	1,002,544	1,032,539																											
Expected Load		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00																											
Delivered WLA		839,582	864,802	890,768	917,481	944,940	973,294	1,002,544	1,032,539																											
Expected Credits (delivered)		1,142,085	1,142,085	1,142,085	1,142,085	1,142,085	1,142,085	1,142,085	1,142,085																											
Transfers In (Out) within Owner Bubble		302,503	277,283	251,317	224,604	197,145	168,791	139,541	109,546																											
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0																											
WQIF-Held Credits		0	0	0	0	0	0	0	0																											
Expected Net Credits		302,503	277,283	251,317	224,604	197,145	168,791	139,541	109,546																											
Class A Credit Sales (Purchases)		272,252	249,555	226,185	202,144	177,431	151,912	125,587	98,591																											
Expected Class B Credits		30,251	27,728	25,132	22,460	19,714	16,879	13,954	10,955																											

## PHOSPHORUS FACILITY SUMMARY

<h1>Henrico Co</h1>	
UPPER JAMES Trading Basin	
<p><b>Facility-level Phosphorus Trading</b> Projected Sales and Purchases of Class A Phosphorus Credits</p> <p>CLASS A CREDITS</p> <p>2019 2020 2021 2022 2023 2024 2025 2026</p> <p>Credits Purchased Credits Sold</p>	
Loading & Credit Summary	
Design Flow (mgd)	75.00
Projected Flow (mgd)	56.26
Projected Avg. Annual Concentration (mg/L)	0.35
<b>Discharged Load (end of pipe)</b>	59,970
Delivery Factor	1.00
Expected Load	59,970
Delivered WLA	92,623
<b>Expected Credits (delivered)</b>	32,653
Transfers In (Out) within Owner Bubble	0
Transfers In (Out) from Private Exchange	0
WQIF-Held Credits	0
<b>Expected Net Credits</b>	32,653
<b>Class A Credit Sales (Purchases)</b>	29,388
<b>Expected Class B Credits</b>	3,265

2019	2020	2021	2022	2023	2024	2025	2026
Planning Period					Future Estimates (non-binding)		
75.00	75.00	75.00	75.00	75.00	75.00	75.00	75.00
56.26	57.95	59.69	61.48	63.32	65.22	67.18	69.19
0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
59,970	61,772	63,626	65,534	67,496	69,521	71,610	73,753
1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
59,970	61,772	63,626	65,534	67,496	69,521	71,610	73,753
92,623	92,623	92,623	92,623	92,623	92,623	92,623	92,623
32,653	30,851	28,997	27,089	25,127	23,102	21,013	18,870
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
32,653	30,851	28,997	27,089	25,127	23,102	21,013	18,870
29,388	27,766	26,097	24,380	22,614	20,792	18,912	16,983
3,265	3,085	2,900	2,709	2,513	2,310	2,101	1,887

## NITROGEN FACILITY SUMMARY





## PHOSPHORUS FACILITY SUMMARY

Hopewell RWTF								
UPPER JAMES Trading Basin								
<div></div>								

**Facility-level Phosphorus Trading**  
Projected Sales and Purchases of Class A Phosphorus Credits

The chart displays the projected sales and purchases of Class A phosphorus credits over an eight-year period from 2019 to 2026. The y-axis represents the number of Class A credits, ranging from -10 to 10. The x-axis shows the years. A legend indicates that blue bars represent 'Credits Purchased' and red bars represent 'Credits Sold'. The chart area is currently blank, suggesting no data has been plotted yet.

Year	Credits Purchased	Credits Sold
2019		
2020		
2021		
2022		
2023		
2024		
2025		
2026		

## Hampton Roads Sanitation District: James River Aggregate

The HRSD James River Aggregate is an aggregate regional water quality-based allocation that is neither derived from nor limiting upon individual facilities on a facility-specific basis (or their associated design flows and specific removal efficiencies) for the regional system. The HRSD James River Aggregate TN WLA of 4,553,500 lbs/yr (or 3,553,500 lbs/yr as of 2022) and TP WLA of 318,436 lbs/yr are binding upon HRSD's regional system as a whole. (Note: The aggregate WLAs reflect: (1) the original aggregate allocations established by DEQ in 2005; (2) the EPA Chesapeake Bay TMDL Appendix X Stage 1 reductions (including Phases 1 and 2 as defined in the WGP Fact Sheet); (3) the subsequent allocation transfer to G. Robert House, Jr. WTP (9,011 lbs/yr TP); and (4) acquisition of allocation by consolidation of the J.H. Miles facility (153,500 lbs/yr TN and 17,437 lbs/yr TP).

Expected Net Credits for an owner bubble may be either positive or negative. If Expected Net Credits is positive, the owner may pledge a percentage of such Credits to the Exchange. If Expected Net Credits is negative, Net Expected Credits identifies the number of Credits that must be purchased to comply with the aggregate Delivered WLA of the bubble.

NITROGEN Credits	Exchange 5-year Planning Period					Future Projections		
	2019	2020	2021	2022	2023	2024	2025	2026
Aggregate WLA								
Delivered WLA (Bubble)	4,553,500	4,553,500	4,553,500	3,553,500	3,553,500			
Projected Delivered Loads	2019	2020	2021	2022	2023	2024	2025	2026
Army Base	142,652	142,789	142,927	140,033	140,274			
Boat Harbor	1,167,137	1,167,275	1,167,414	1,313,407	1,305,253			
Ches/Eliz*	1,448,740	1,455,884	1,463,063	-	-			
James River	359,535	360,057	360,580	362,100	361,496			
Lawnes Point	-	-	-	-	-			
Nansemond	405,362	413,393	421,584	294,975	296,245			
VIP	422,420	423,308	424,199	432,080	422,161			
Williamsburg	276,109	279,494	282,921	277,068	272,659			
TOTAL Delivered Loads	4,221,955	4,242,200	4,262,688	2,819,663	2,798,088			
Net Credits Available	2019	2020	2021	2022	2023	2024	2025	2026
Expected Credits	331,545	311,300	290,812	733,837	755,412			
Private Exchanges**	(1)	(1)	(1)	(1)	(1)			
Expected Net Credits	331,544	311,299	290,811	733,836	755,411			
Class A Sales (Purchases)	0	0	0	0	0			
Expected Class B Credits	331,544	311,299	290,811	733,836	755,411			
WQIF-Held Credits	0	0	0	0	0			

PHOSPHORUS Credits	Exchange 5-year Planning Period					Future Projections		
	2019	2020	2021	2022	2023	2024	2025	2026
Aggregate WLA								
Delivered WLA (Bubble)	318,436	318,436	318,436	318,436	318,436			
Projected Delivered Loads	2019	2020	2021	2022	2023	2024	2025	2026
Army Base	25,360	25,385	25,409	24,895	24,938			
Boat Harbor	35,912	35,916	35,920	36,232	36,007			
Ches/Eliz*	49,202	49,445	49,689	-	-			
James River	31,959	32,005	32,052	32,187	32,133			
Lawnes Point								
Nansemond	64,858	66,143	67,453	70,794	71,099			
VIP	75,097	75,255	75,413	76,814	75,051			
Williamsburg	22,089	22,360	22,634	22,165	21,813			
TOTAL Delivered Loads	304,477	306,509	308,570	263,087	261,041			
Net Credits Available	2019	2020	2021	2022	2023	2024	2025	2026
Expected Credits	13,959	11,927	9,866	55,349	57,395			
Private Exchanges**	(1)	(1)	(1)	(1)	(1)			
Expected Net Credits	13,958	11,926	9,865	55,348	57,394			
Class A Sales (Purchases)	0	0	0	0	0			
Expected Class B Credits	13,958	11,926	9,865	55,348	57,394			
WQIF-Held Credits	0	0	0	0	0			

\* HRSD plans to consolidate the Chesapeake-Elizabeth STP within its regional system by the 2022 calendar year.

\*\* Reflects a private trade with the Department of Energy - Jefferson Lab (one pound each of nitrogen and phosphorus)

**FACILITY (OR OWNER BUBBLE) NAME: VAN040090 HRSD James River Aggregate**

**COMPLIANCE STATEMENT FOR FACILITIES SUBJECT TO REDUCED WASTELOAD ALLOCATIONS IN CHESAPEAKE BAY TMDL**

**Check One:**

- ☒ James River TN Compliance  
☐ York River TP Compliance

**Compliance Information Required by 9 VAC 25-820-40 A 2 (Check Option 1 or Option 2)**

☐ Option 1 (9 VAC 25-820-40 A 2 b): Permittee hereby requests WLA to be effective as of January 1, 2017.

☒ Option 2 (9 VAC 25-820-40 A 2 a): Additional capital project(s) is needed to ensure continued compliance with the WLA through the applicable compliance schedule deadline for the tributary. (Note: Checking Option 2 does not preclude use of credit purchase as means of compliance under II.B.)

If Option 2 is checked, briefly describe need for additional projects:

Completion of the Virginia Initiative STP projects are needed to reliably meet the 2017 aggregate wasteload allocation.

**Implementation Schedule**

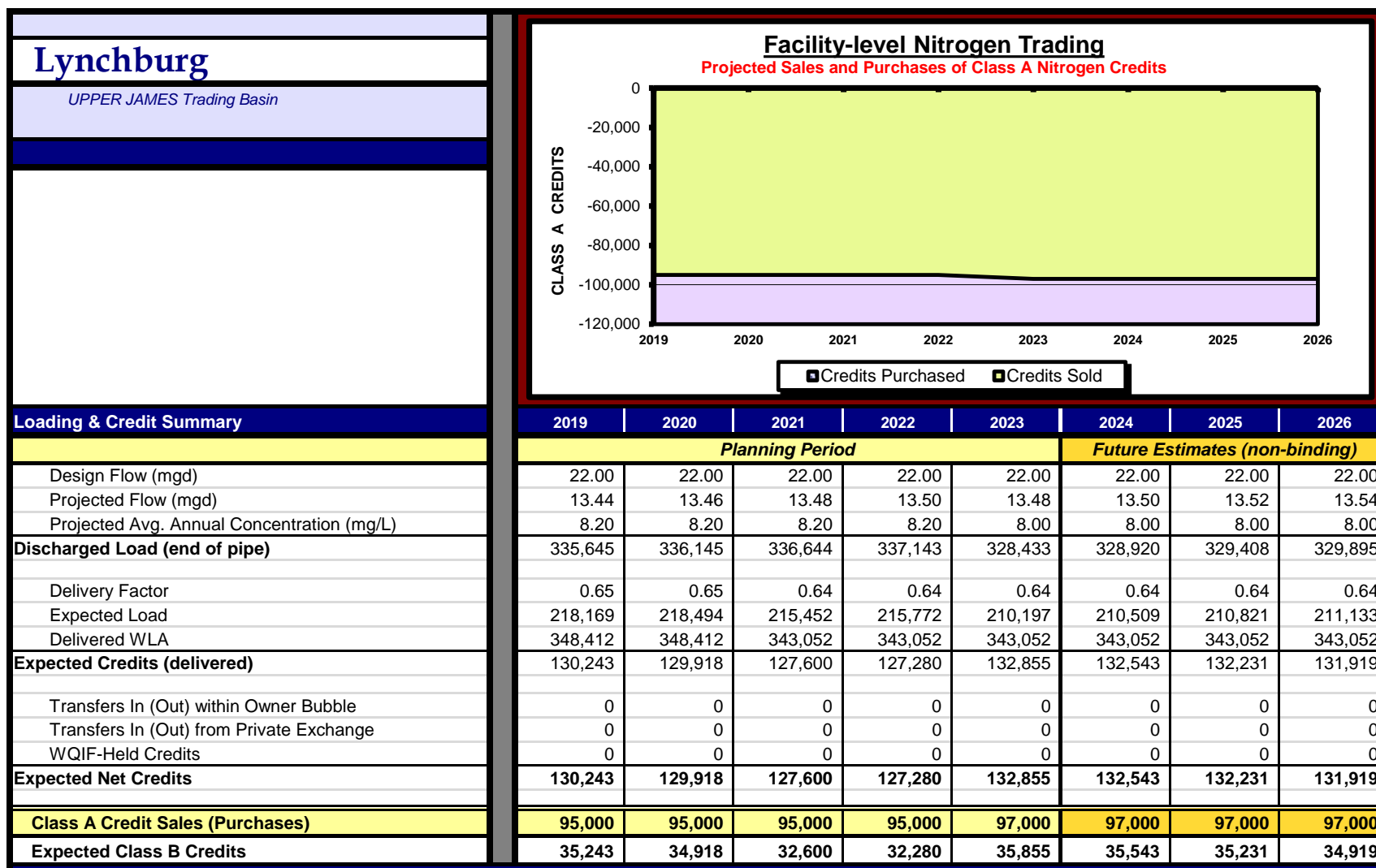
1. Does permittee anticipate using credit purchase to comply?  
☒ NO ☐ YES
2. Is permittee implementing a capital project to comply?  
☐ NO ☒ YES  
(If YES, compliance is required as soon as possible but no later than the applicable tributary compliance schedule deadline.)
3. Capital Project Milestone Schedule (Specify estimated date for each milestone. For bubbles, specify facility name(s) and list multiple facility schedules if applicable.)

*See discussion of progress and schedule below.*

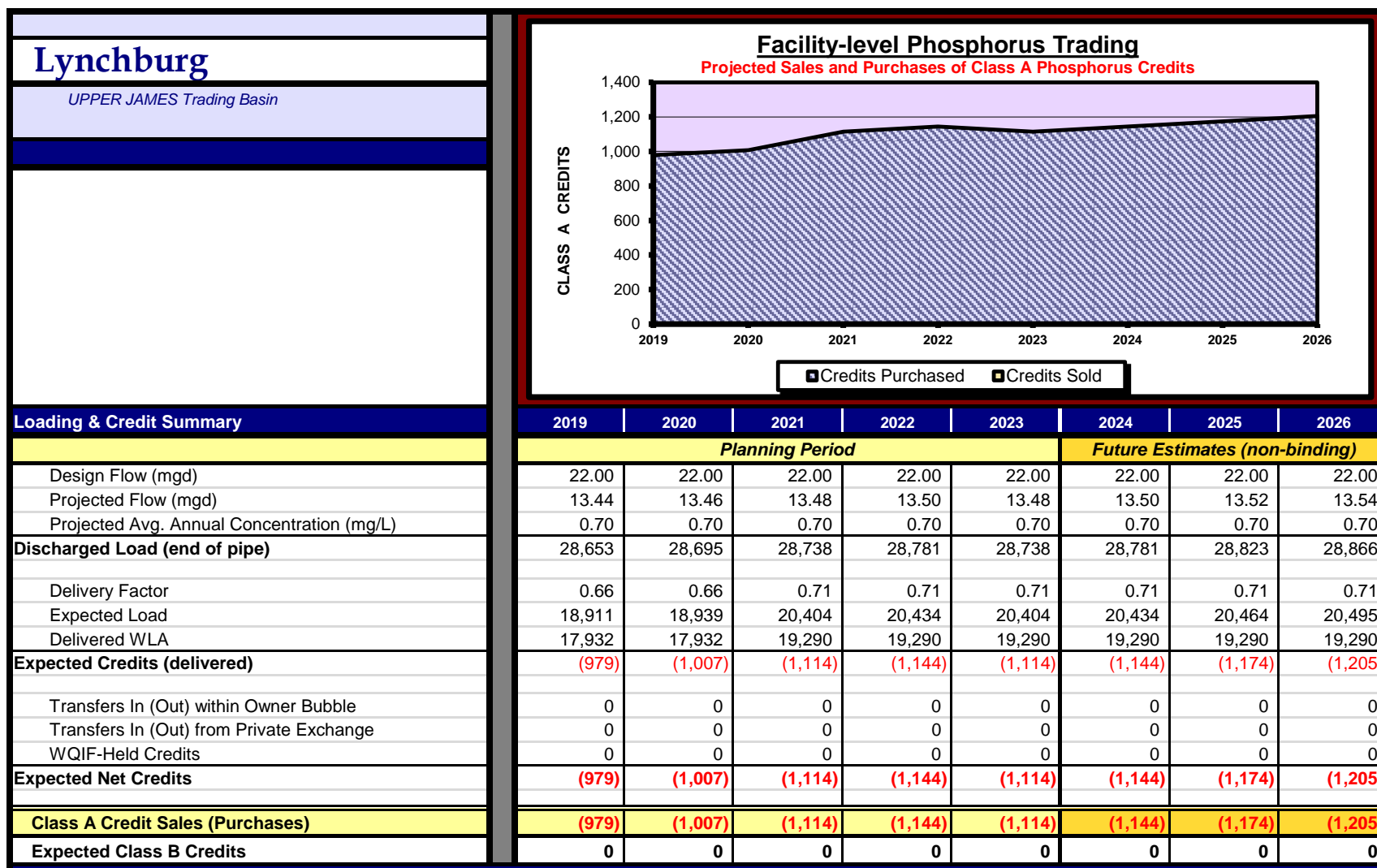
HRSD's recent Army Base STP and Virginia Initiative Plant (VIP) upgrades were designed, and have proven sufficient, to meet HRSD's James River TN Aggregate WLA through and including the 2017 reduction (TN Aggregate WLA of 4,553,000 lbs/yr) established by the Watershed General Permit and related James River Registration List (2/2017) in compliance with applicable water quality standards and consistent with Chesapeake Bay TMDL Appendix X (Staged Implementation Approach for Wastewater Treatment Facilities in the Virginia James River Basin) (December 2010).

By 2022, a further reduction is contemplated under the staged implementation approach. Due to lead times associated with completing large complex projects within the HRSD system in order to meet the anticipated 2022 TN Aggregate WLA (3,553,500 lbs/yr TN) HRSD currently intends to leverage the planned consolidation of the Chesapeake-Elizabeth STP within the regional system to support compliance with the 2022 TN Aggregate WLA. This consolidation is expected to require fewer WQIF funds than a facility upgrade alternative.

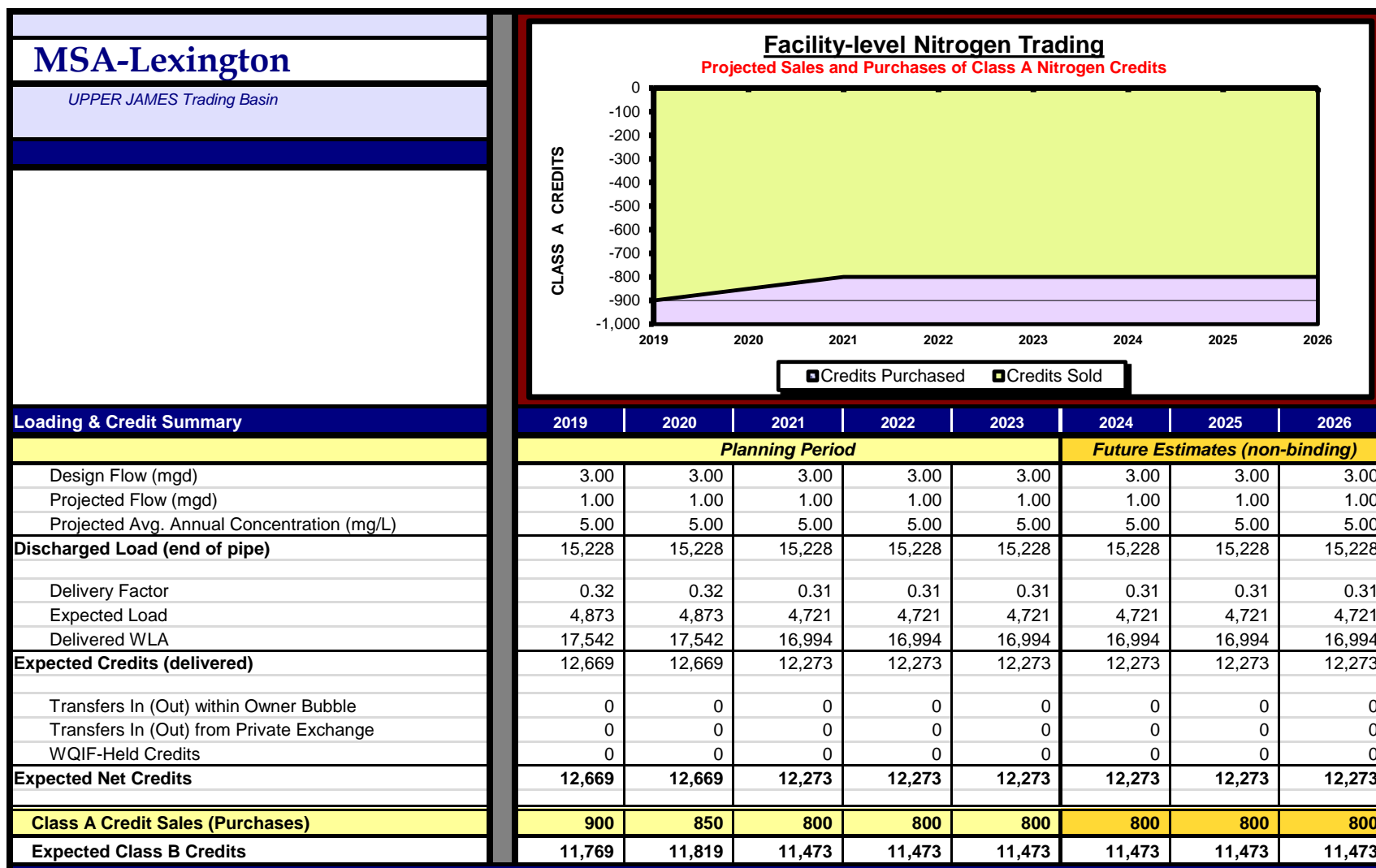
## NITROGEN FACILITY SUMMARY



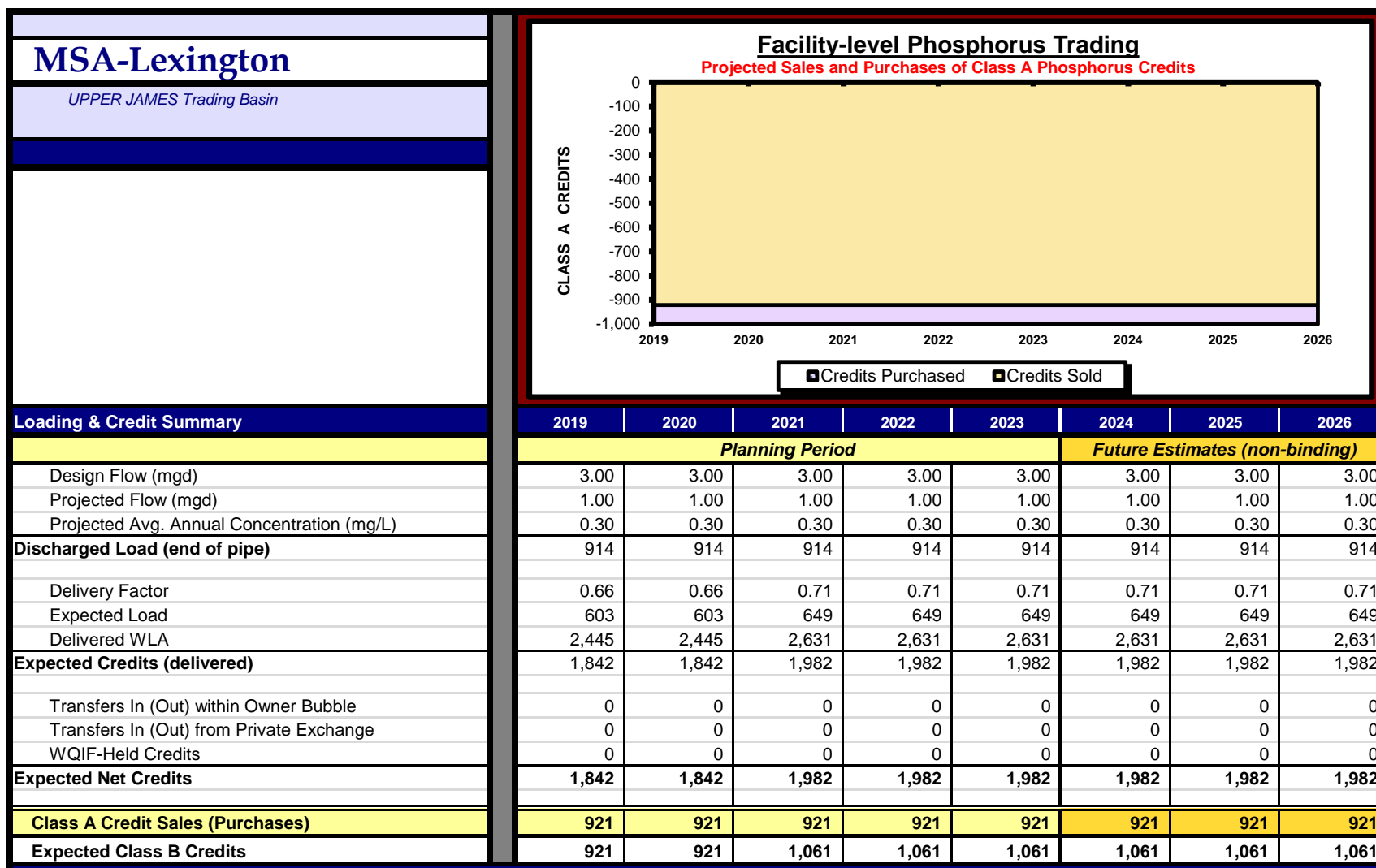
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

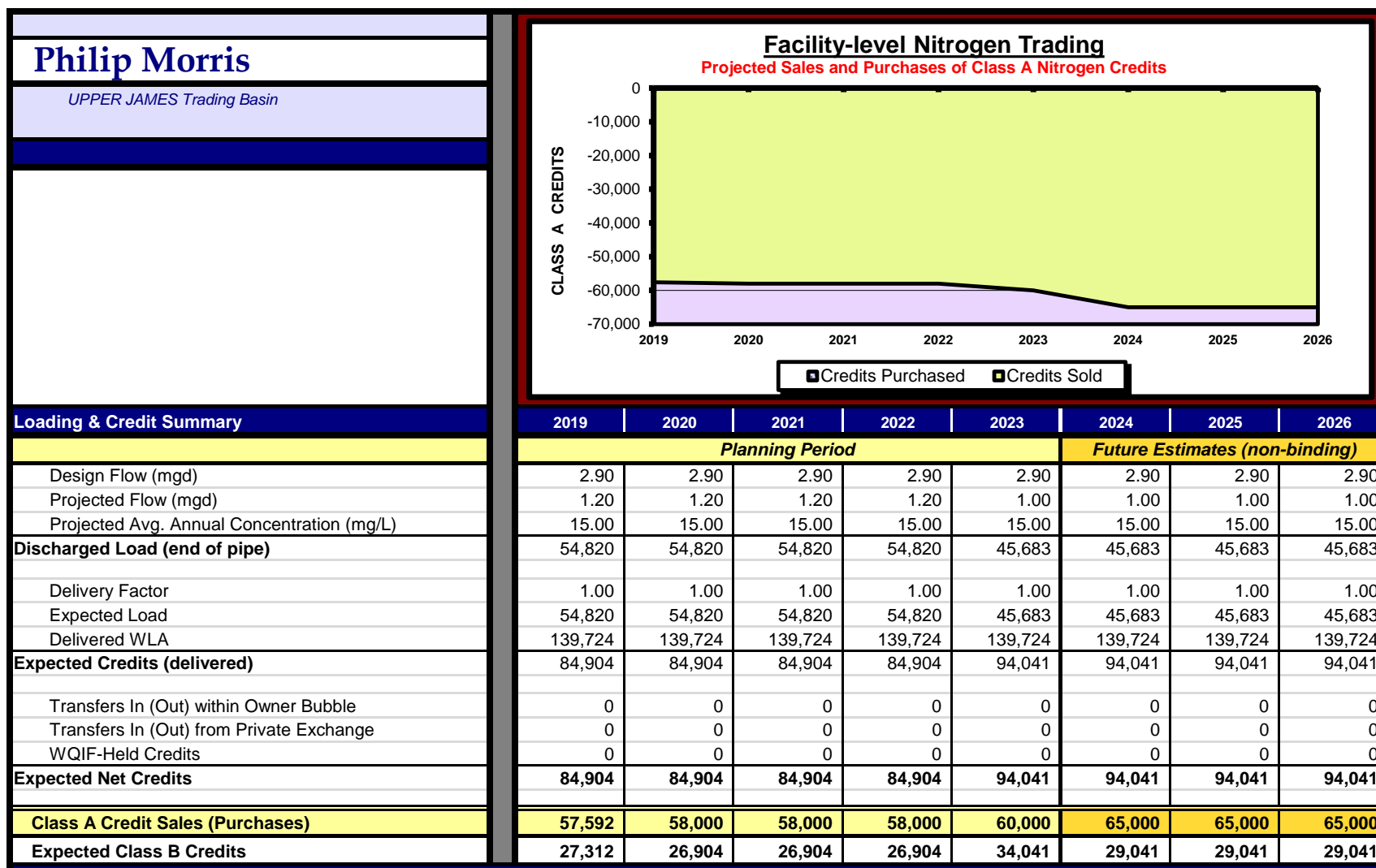


## PHOSPHORUS FACILITY SUMMARY





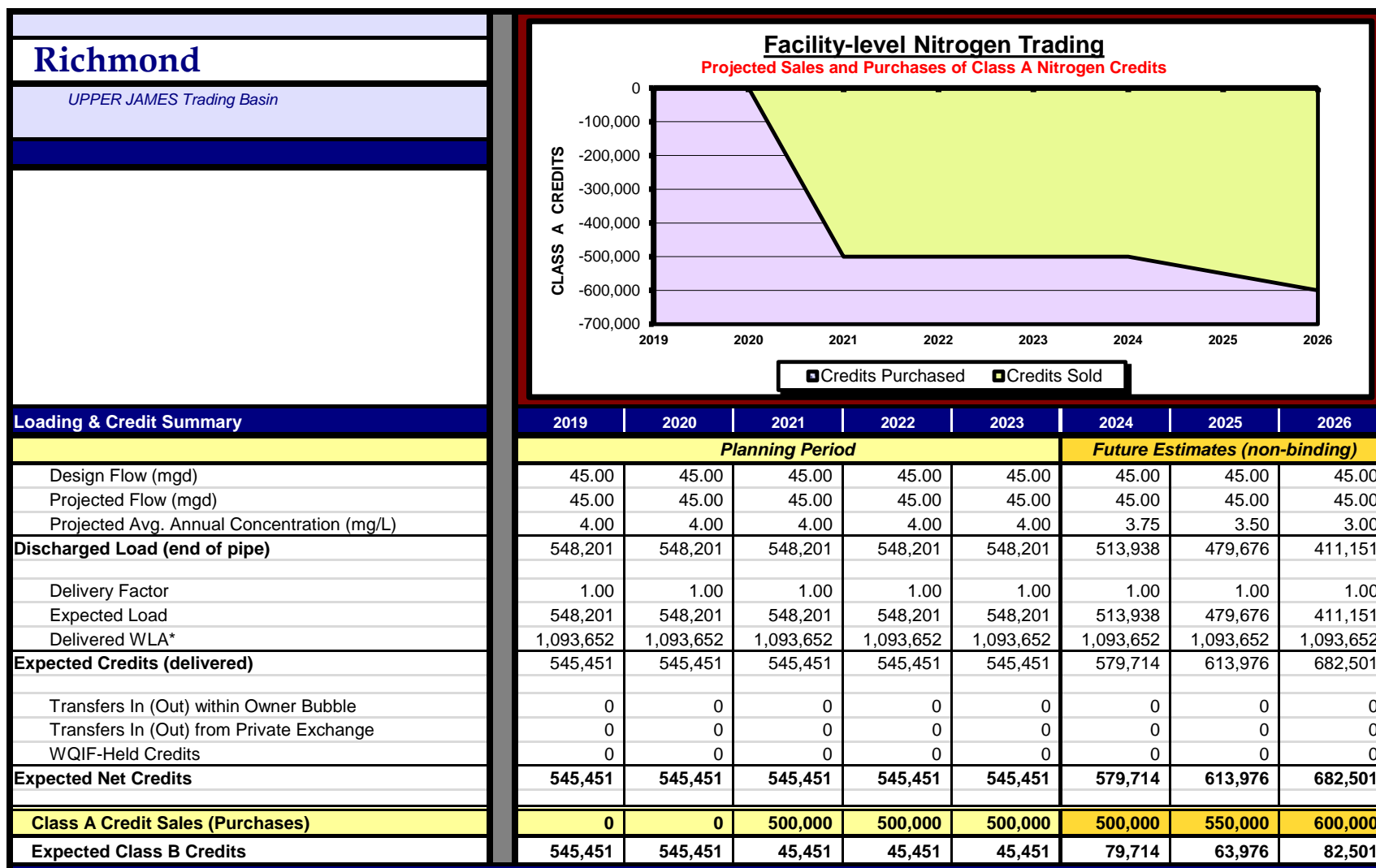
## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

[illegible]

## NITROGEN FACILITY SUMMARY



\* Reflects allocation transfer to the Oilville WWTP of 2,750 delivered pounds of TN based on agreement with Goochland County

## PHOSPHORUS FACILITY SUMMARY

Richmond

UPPER JAMES Trading Basin

Facility-level Phosphorus Trading

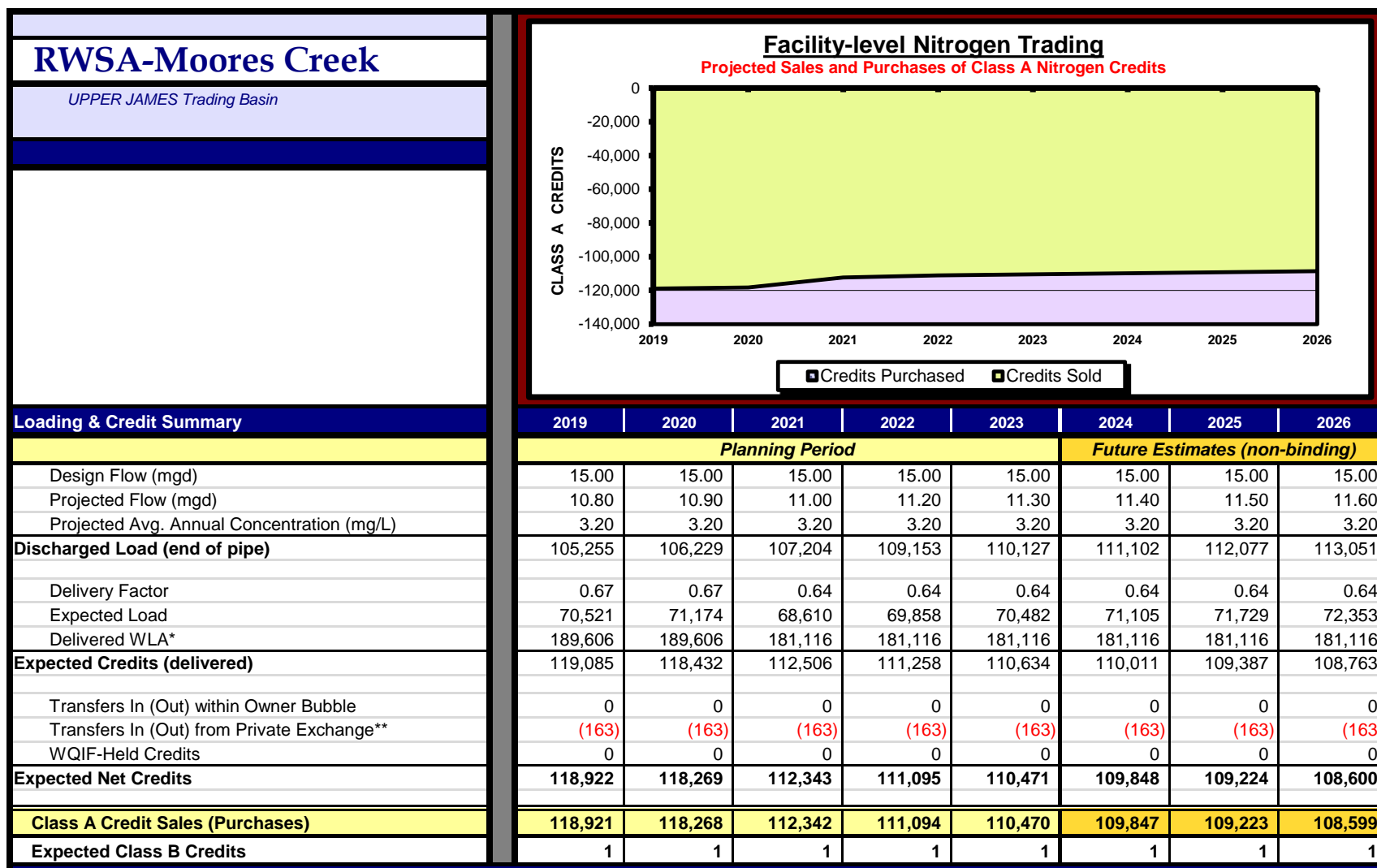
Projected Sales and Purchases of Class A Phosphorus Credits

Year	Credits Purchased	Credits Sold
2019	0	0
2020	-5,000	0
2021	-5,000	0
2022	-7,000	0
2023	-20,000	20,000
2024	-20,000	20,000
2025	-20,000	20,000
2026	-20,000	20,000

Loading & Credit Summary		2019	2020	2021	2022	2023	2024	2025	2026
		Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)		45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Projected Flow (mgd)		45.00	45.00	45.00	45.00	45.00	45.00	45.00	45.00
Projected Avg. Annual Concentration (mg/L)		0.35	0.35	0.35	0.35	0.25	0.25	0.25	0.25
Discharged Load (end of pipe)		47,968	47,968	47,968	47,968	34,263	34,263	34,263	34,263
Delivery Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load		47,968	47,968	47,968	47,968	34,263	34,263	34,263	34,263
Delivered WLA*		55,574	55,574	55,574	55,574	55,574	55,574	55,574	55,574
Expected Credits (delivered)		7,606	7,606	7,606	7,606	21,311	21,311	21,311	21,311
Transfers In (Out) within Owner Bubble		0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange		0	0	0	0	0	0	0	0
WQIF-Held Credits		0	0	0	0	0	0	0	0
Expected Net Credits		7,606	7,606	7,606	7,606	21,311	21,311	21,311	21,311
Class A Credit Sales (Purchases)		0	0	5,000	6,600	20,000	20,000	20,000	20,000
Expected Class B Credits		7,606	7,606	2,606	1,006	1,311	1,311	1,311	1,311

\* Reflects allocation transfer to the Oilville WWTP of 275 delivered pounds of TP based on agreement with Goochland County

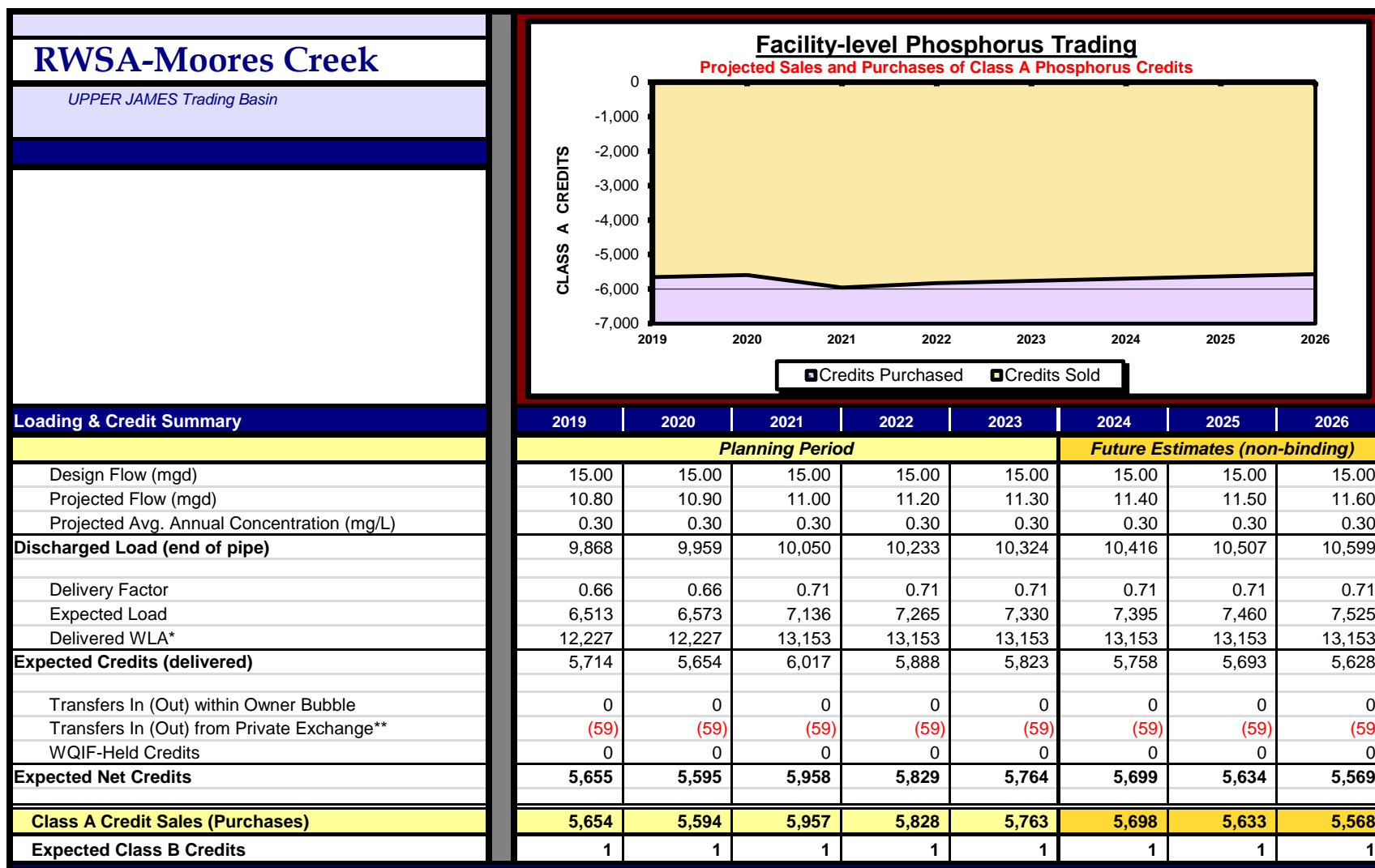
## NITROGEN FACILITY SUMMARY



\* Wasteload allocation reflects the consolidation of the Camelot WWTP

\*\* Represents a private trade with Ryder Enterprises of 163 nitrogen credits

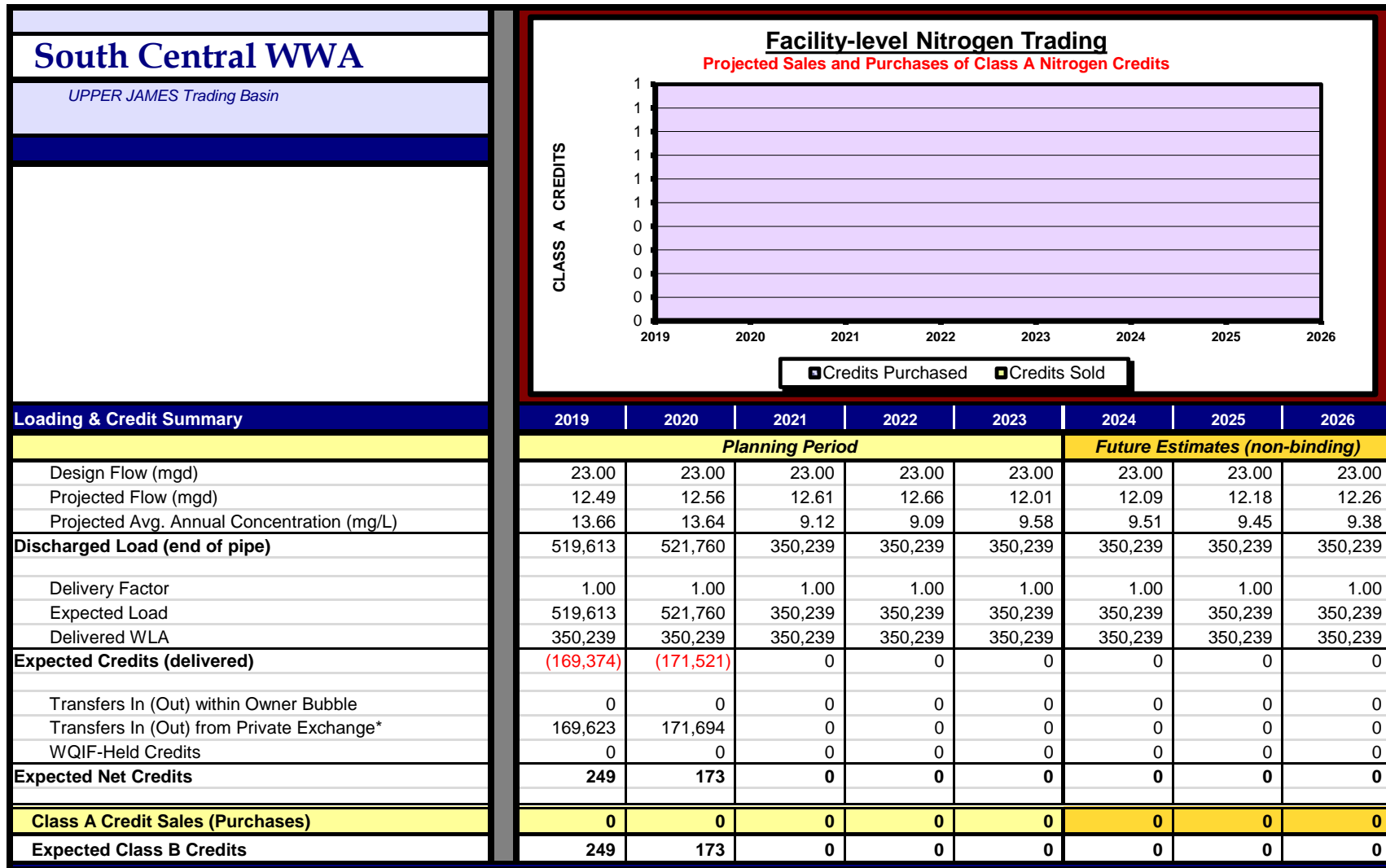
## PHOSPHORUS FACILITY SUMMARY



\* Wasteload allocation reflects the consolidation of the Camelot WWTP

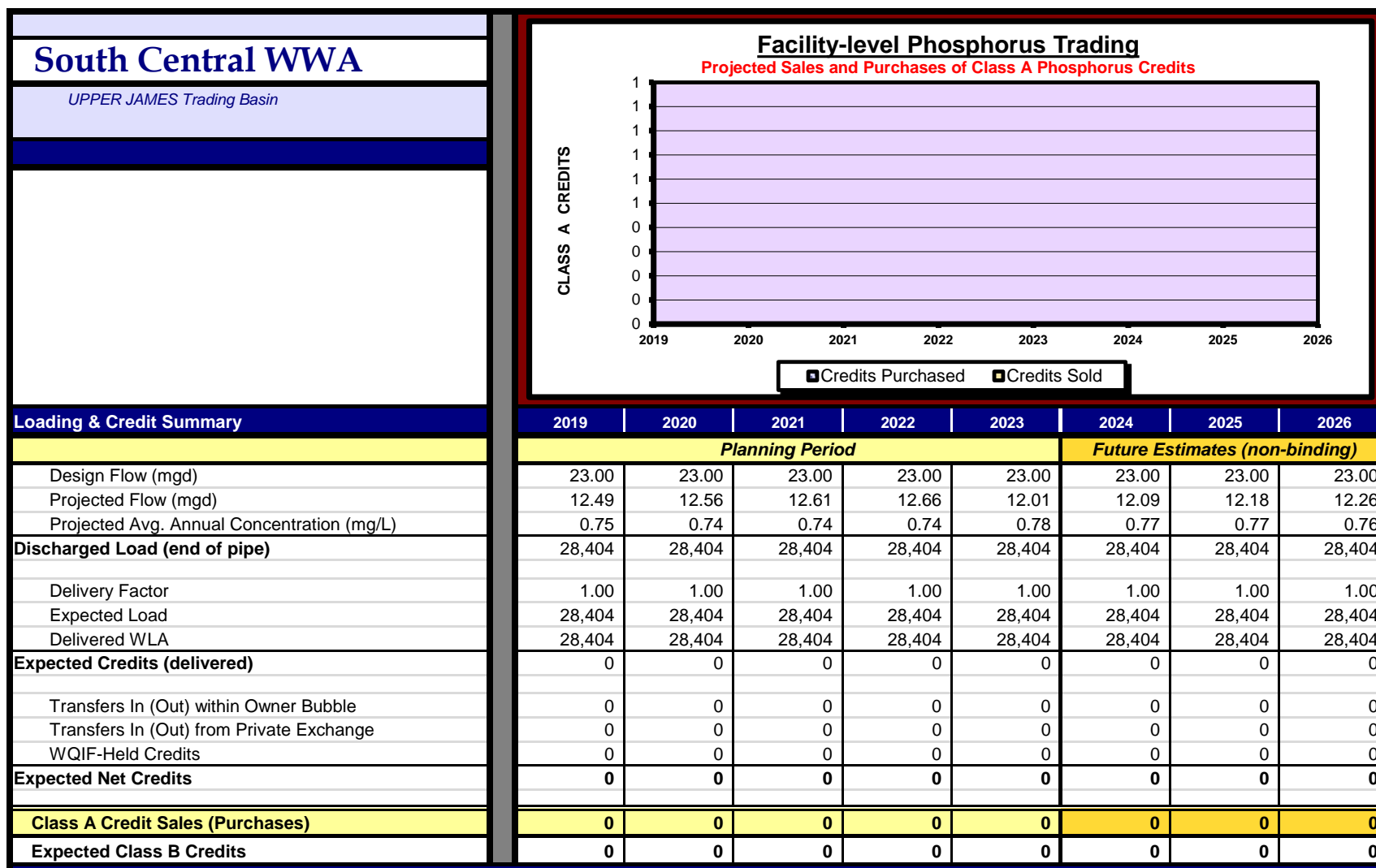
\*\* Represents a private trade with Ryder Enterprises of 59 phosphorus credits

## NITROGEN FACILITY SUMMARY



\* Represents Credits provided by Chesterfield County's Proctors Creek facility via Private Exchange

## PHOSPHORUS FACILITY SUMMARY





## NITROGEN FACILITY SUMMARY

Tyson Foods-Glen Allen

UPPER JAMES Trading Basin

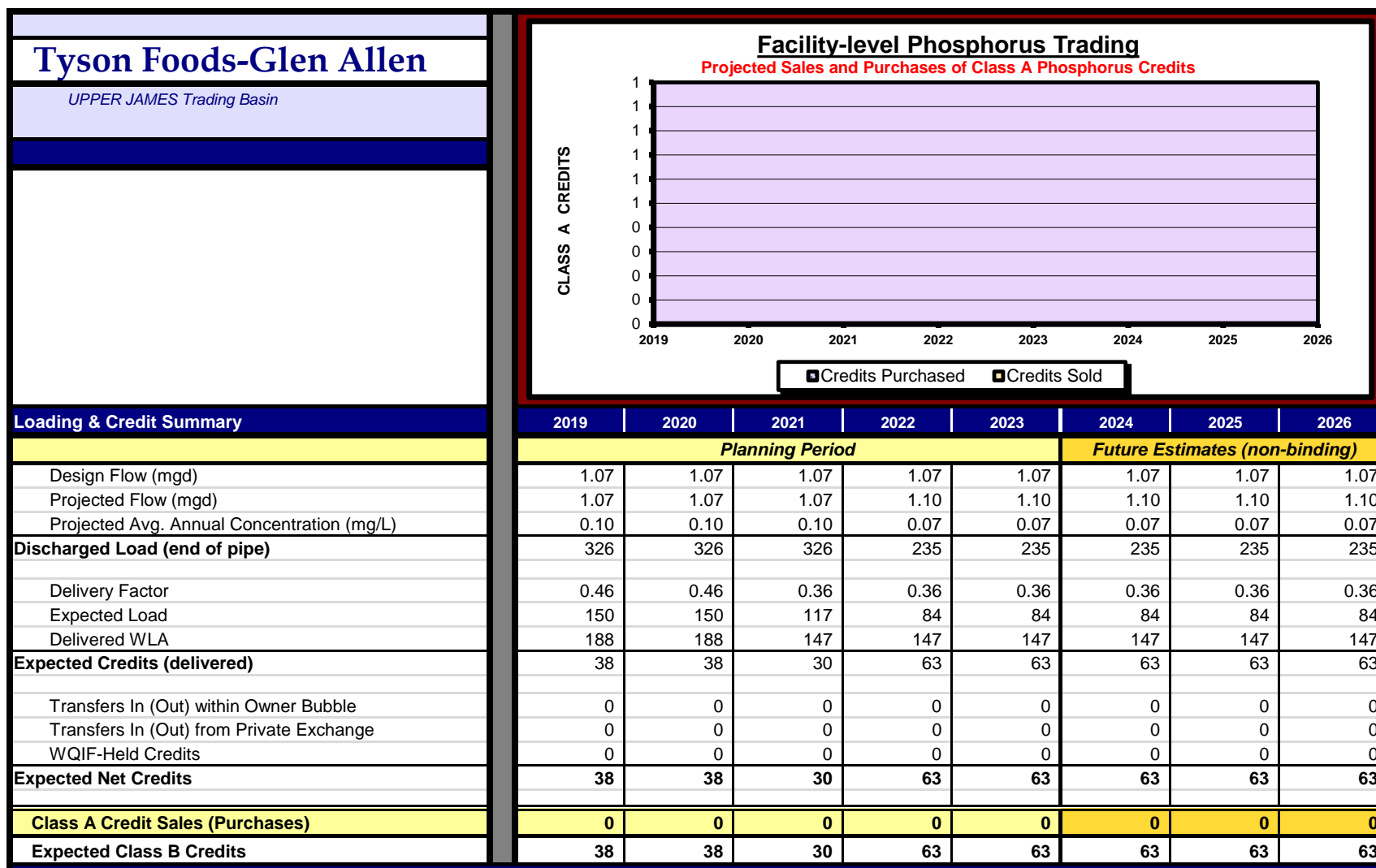
Loading & Credit Summary

	2019	2020	2021	2022	2023	2024	2025	2026
	Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Projected Flow (mgd)	1.07	1.07	1.07	1.10	1.10	1.10	1.10	1.10
Projected Avg. Annual Concentration (mg/L)	6.00	6.00	6.00	4.30	4.30	4.30	4.30	4.30
Discharged Load (end of pipe)	19,552	19,552	19,552	14,405	14,405	14,405	14,405	14,405
Delivery Factor	0.16	0.16	0.18	0.18	0.18	0.18	0.18	0.18
Expected Load	3,128	3,128	3,519	2,593	2,593	2,593	2,593	2,593
Delivered WLA	3,128	3,128	3,519	3,519	3,519	3,519	3,519	3,519
Expected Credits (delivered)	0	0	0	926	926	926	926	926
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange	0	0	0	0	0	0	0	0
WQIF-Held Credits	0	0	0	0	0	0	0	0
Expected Net Credits	0	0	0	926	926	926	926	926
Class A Credit Sales (Purchases)	0	0	0	0	0	0	0	0
Expected Class B Credits	0	0	0	926	926	926	926	926

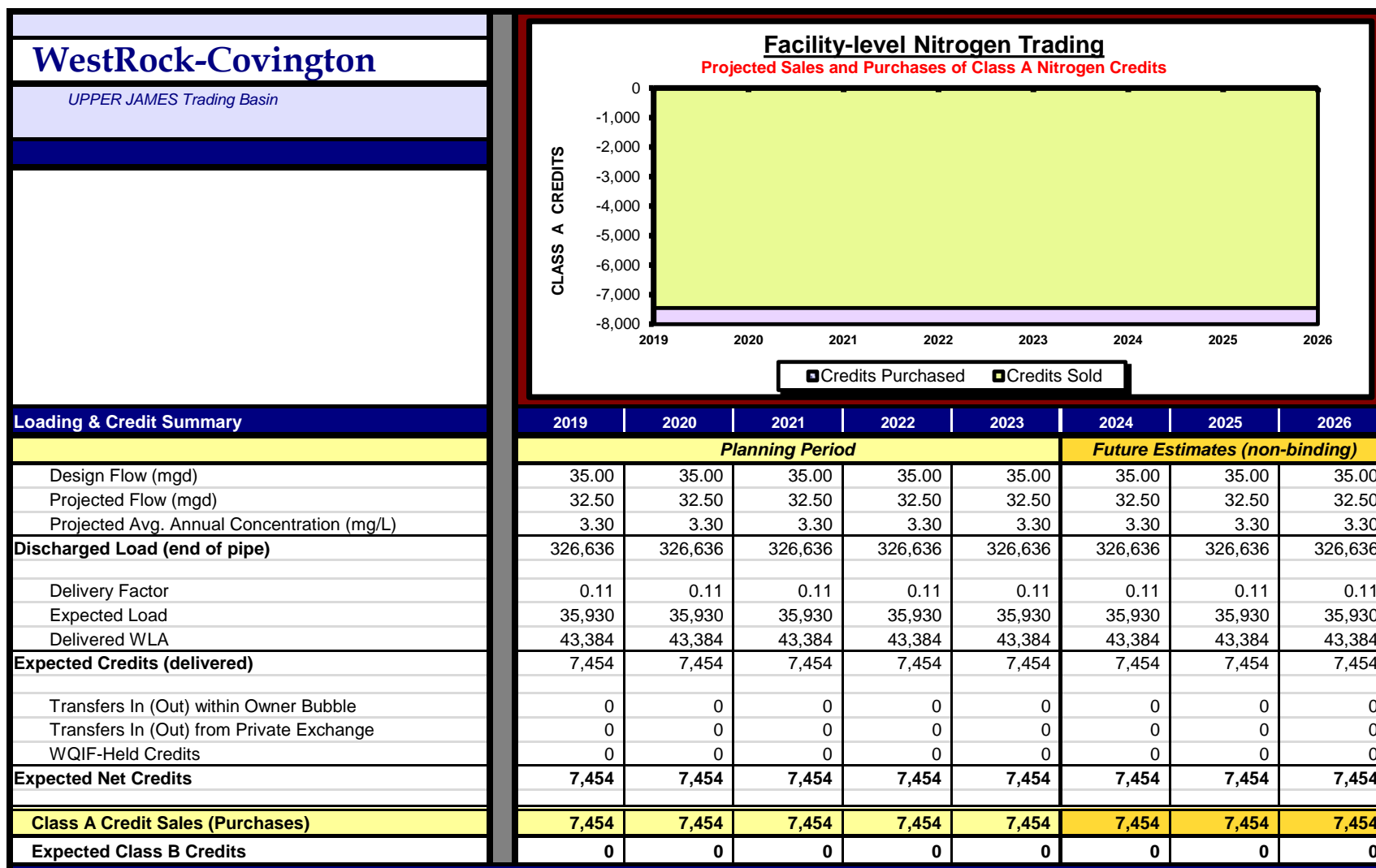
Facility-level Nitrogen Trading

Projected Sales and Purchases of Class A Nitrogen Credits

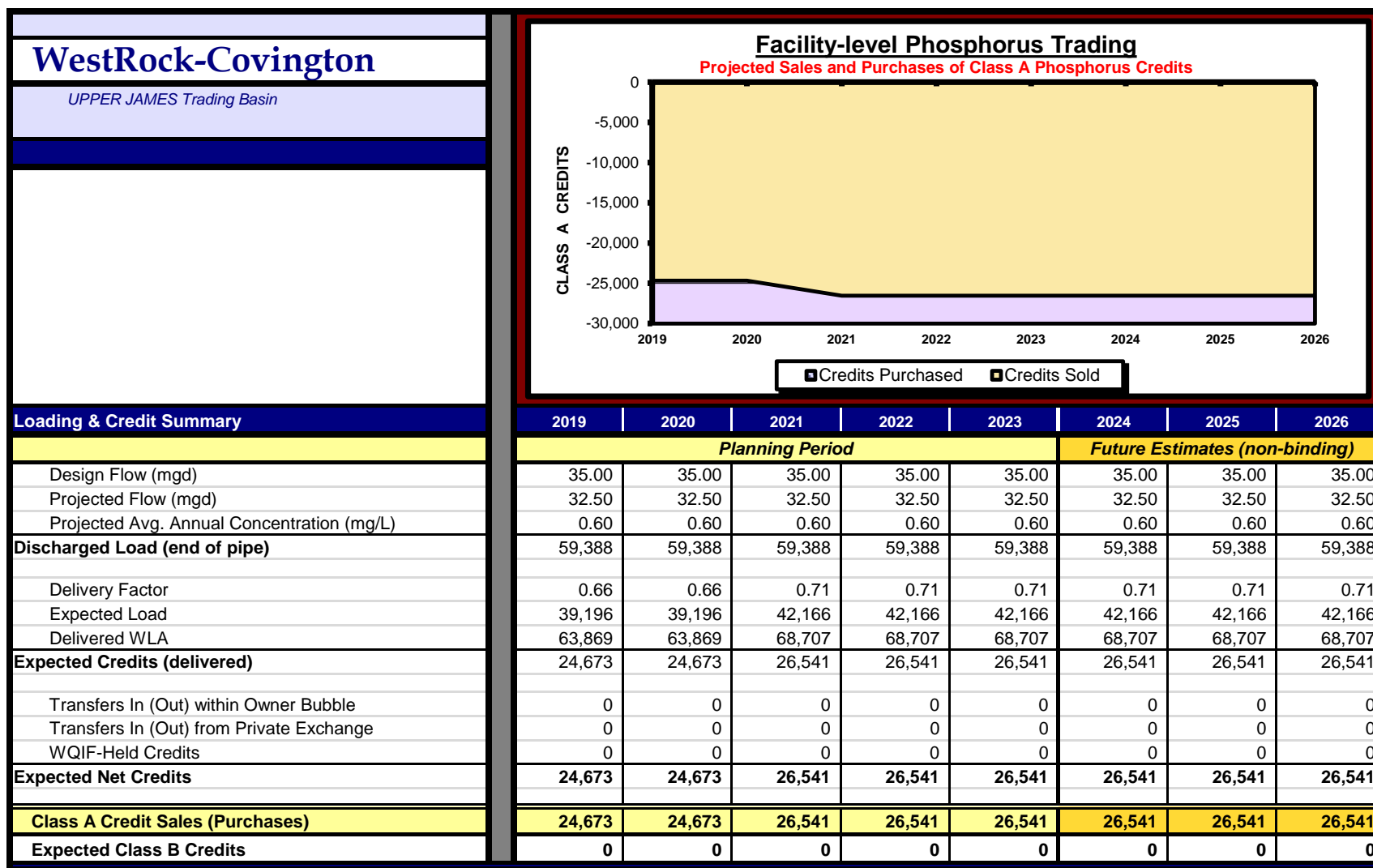
## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY



SECTION 6

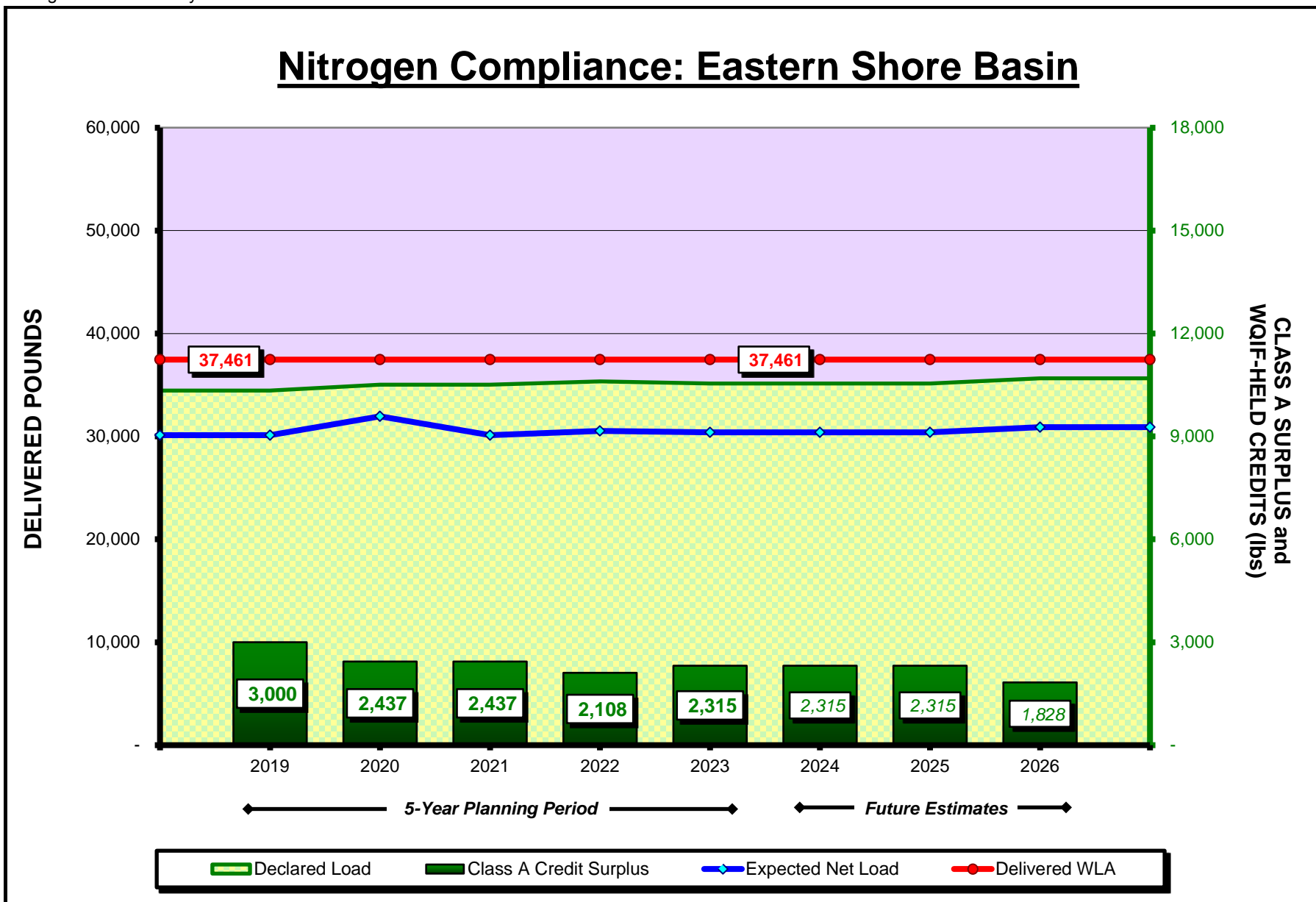
# Eastern Shore Basin Exchange Compliance Plan



Consistent with similar disclosures made in conjunction with the original Exchange Compliance Plan dated July 31, 2007, and each annual update thereafter, Credit forecasts for the Eastern Shore basin may indicate a potential lack of Credit availability from facilities located within the Eastern Shore basin at various times during the 5-year Planning Period. This situation derives in part from the relatively small number of facilities and total allocations of the Eastern Shore basin.

In 2010, Virginia law governing nutrient allocation compliance and reporting was amended by House Bill 1290 (2010 Acts of Assembly Chapter 11) to amend the general limitation of trading to the tributary level by allowing that “permitted facilities in the Eastern Shore basin may also acquire credits from permitted facilities in the Potomac and Rappahannock tributaries.” Va. Code § 62.1-44.19:18.A.1.

Accordingly, this Annual Update incorporates use of Class A Credits from the Potomac basin — **when necessary** — to meet Eastern Shore Class A Credit purchase requests that cannot be satisfied from Class A Credit sales commitments by facilities in the Eastern Shore basin. This limited cross-basin trading is noted, as applicable, on the Credit ledgers in both this section and the Potomac section. The Nitrogen and Phosphorus compliance charts of the Eastern Shore basin illustrate the impact of Class A Credits provided by the Potomac basin (Declared Load forecast), while the Expected Load line represents the net Expected Credits of Eastern Shore facilities only.



## EASTERN SHORE Basin: Nitrogen Credit Ledger

[illegible]

**\*There are no Class A Credit Purchases for this Compliance Year**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**



## EASTERN SHORE Basin: Nitrogen Credit Ledger

[illegible]

**\*There are no Class A Credit Purchases for this Compliance Year**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## EASTERN SHORE Basin: Nitrogen Credit Ledger

[illegible]

**\*There are no Class A Credit Purchases for this Compliance Year**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## EASTERN SHORE Basin: Nitrogen Credit Ledger

[illegible]

**\* For this Compliance Year, 0% of all Class A Credit Purchases are expected to be satisfied using Class B Credits.**

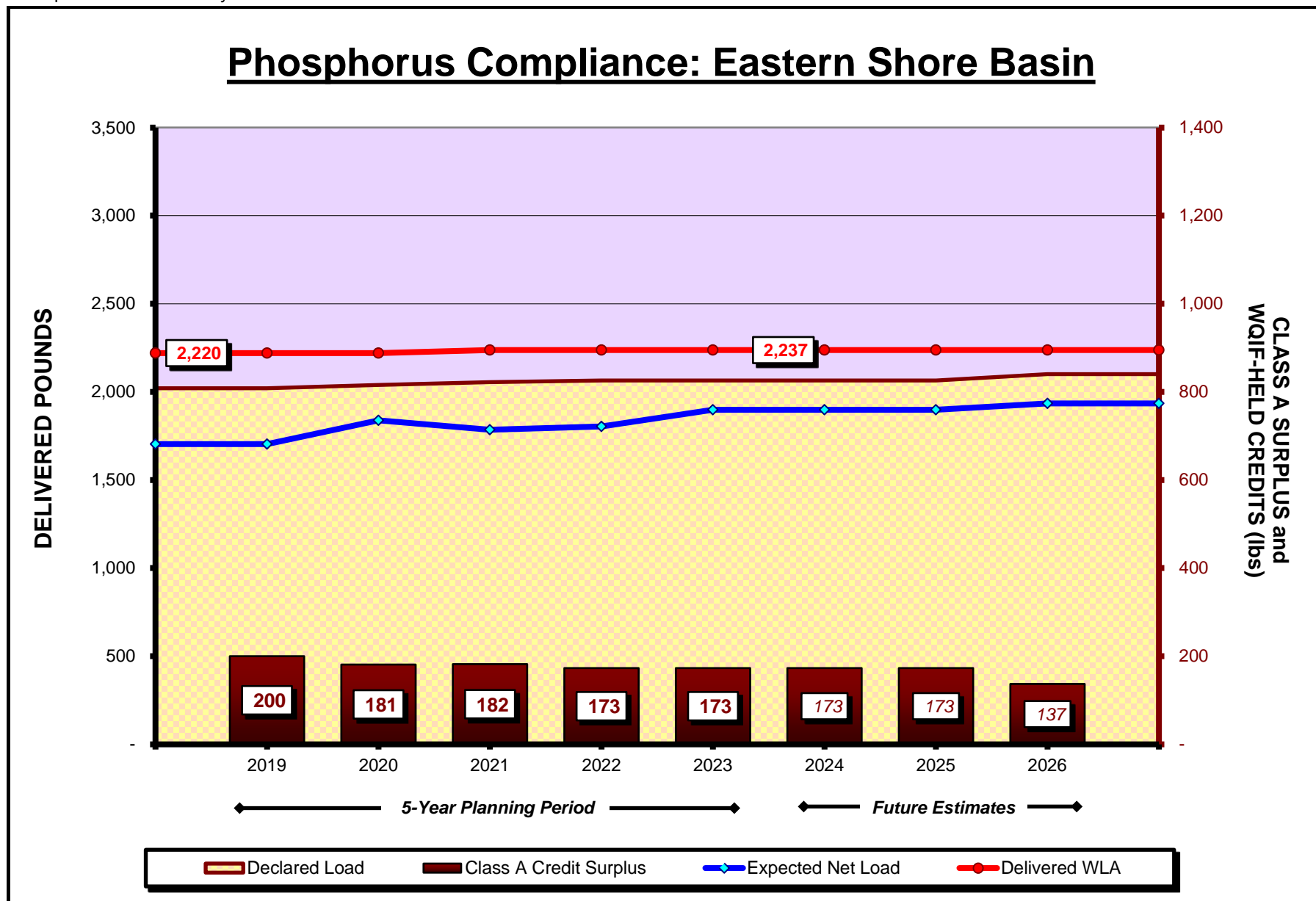
**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

## EASTERN SHORE Basin: Nitrogen Credit Ledger

[illegible]

**\*There are no Class A Credit Purchases for this Compliance Year**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**



### EASTERN SHORE Basin: Phosphorus Credit Ledger

[illegible]

**\*There are no Class A Credit Purchases for this Compliance Year**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

### EASTERN SHORE Basin: Phosphorus Credit Ledger

[illegible]

**\*There are no Class A Credit Purchases for this Compliance Year**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

### EASTERN SHORE Basin: Phosphorus Credit Ledger

[illegible]

**\*There are no Class A Credit Purchases for this Compliance Year**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**





### EASTERN SHORE Basin: Phosphorus Credit Ledger

[illegible]

**\*There are no Class A Credit Purchases for this Compliance Year**

**\*\* Class A and Class B Credit Sales are estimates only; actual Credits generated—and the resulting sales prices—may vary from estimates based on Delivered Loads in the Compliance Year.**

# Eastern Shore Basin

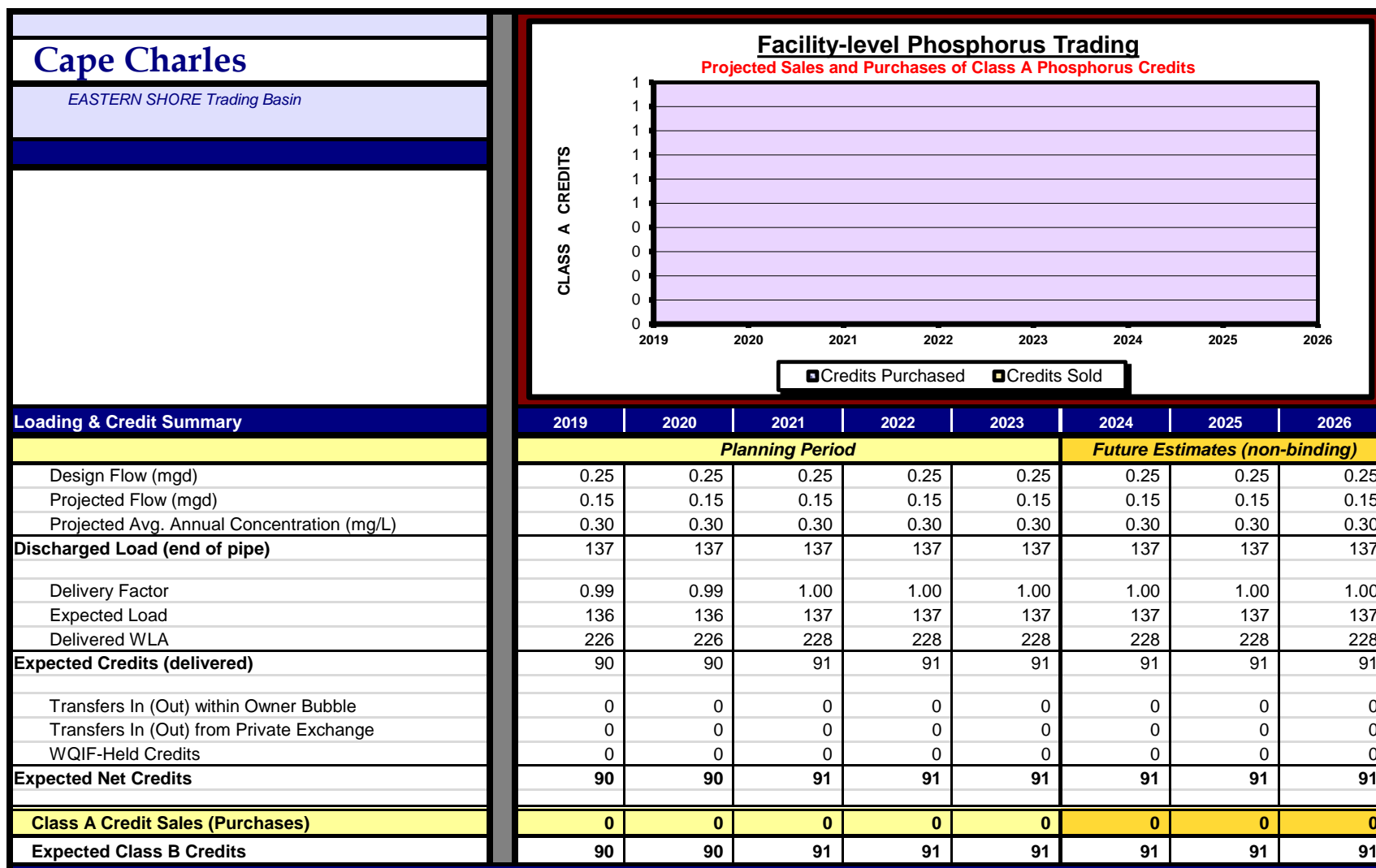
Supplemental Information for Individual Facilities



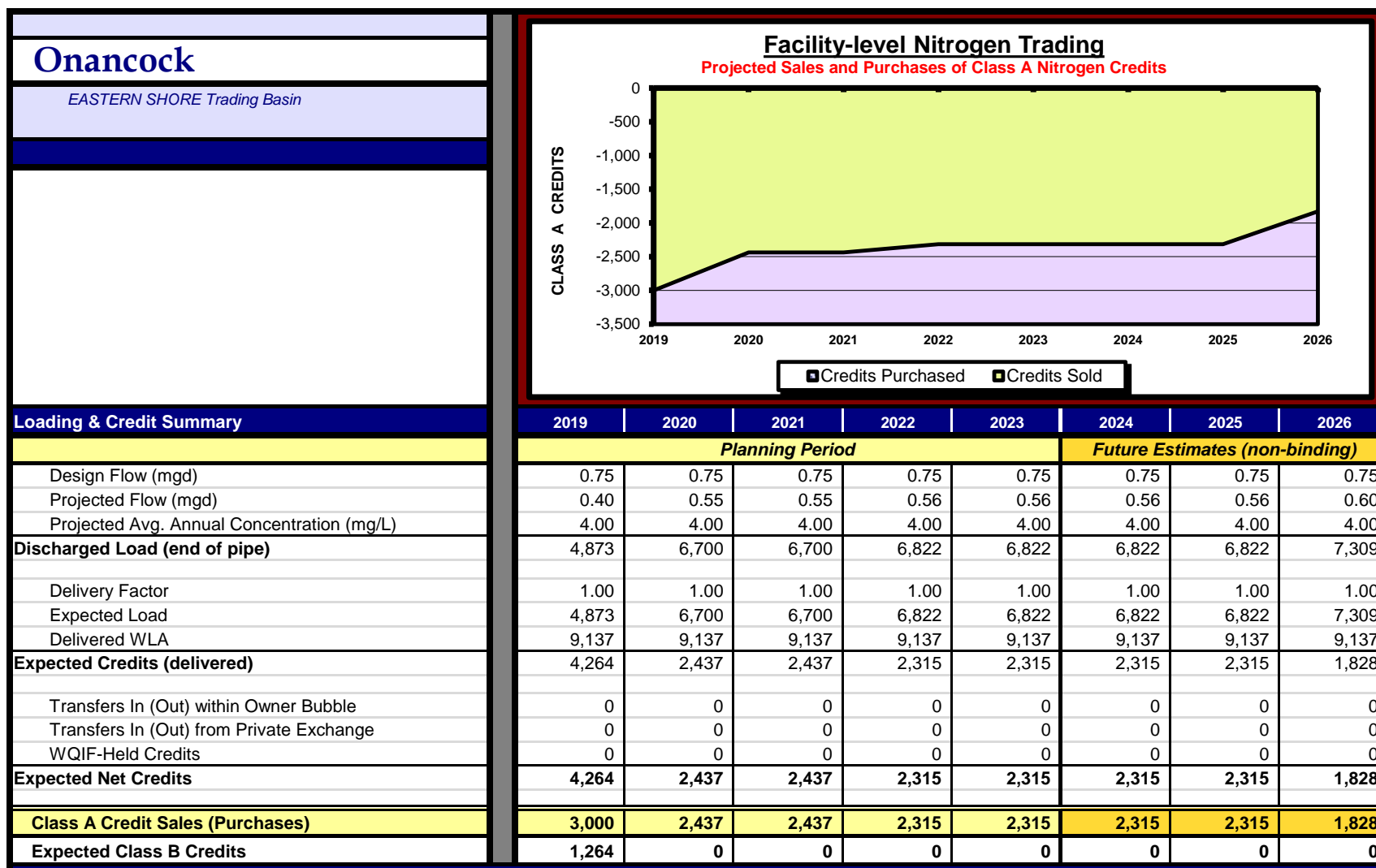
## NITROGEN FACILITY SUMMARY

[illegible]

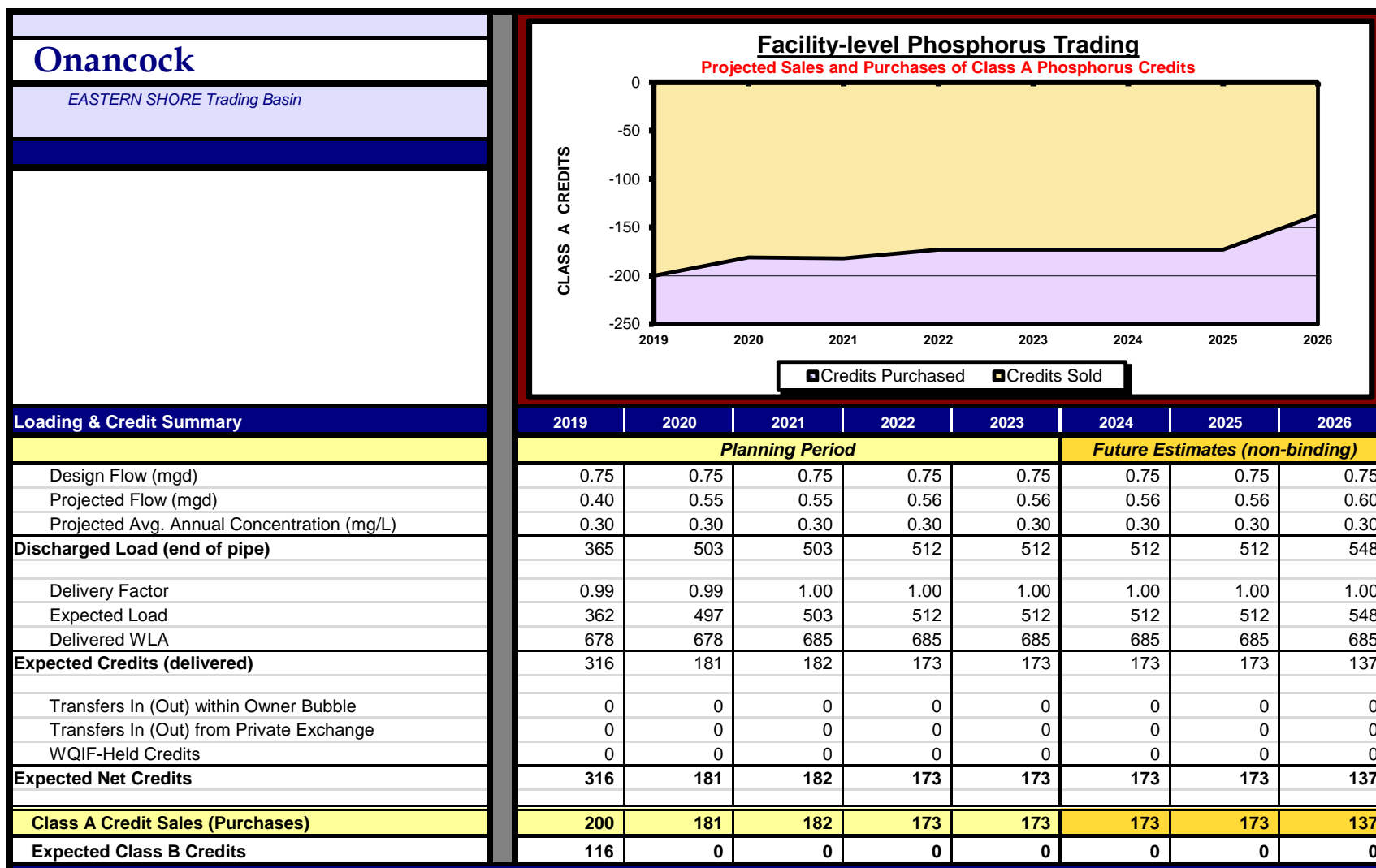
## PHOSPHORUS FACILITY SUMMARY



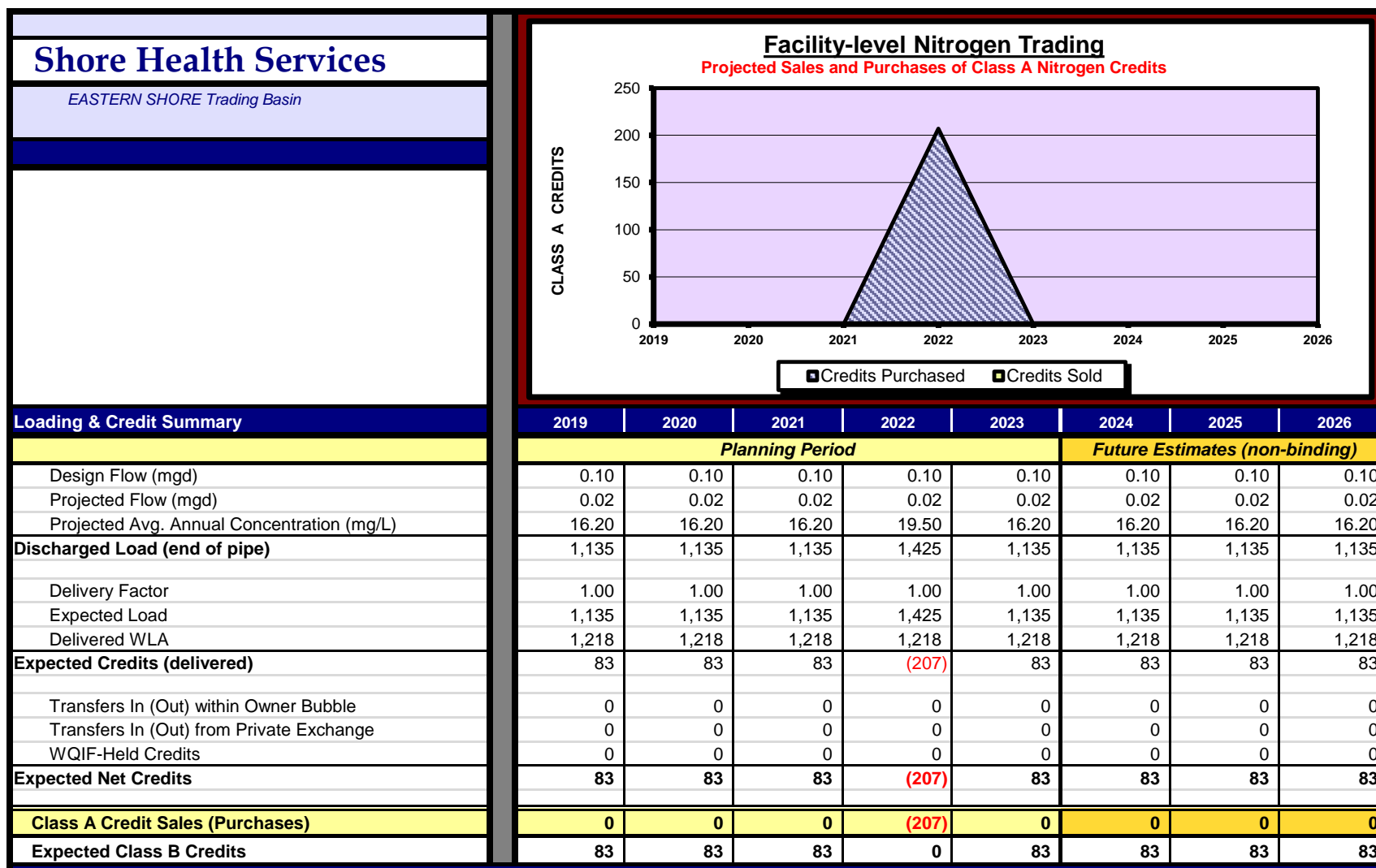
## NITROGEN FACILITY SUMMARY



## PHOSPHORUS FACILITY SUMMARY

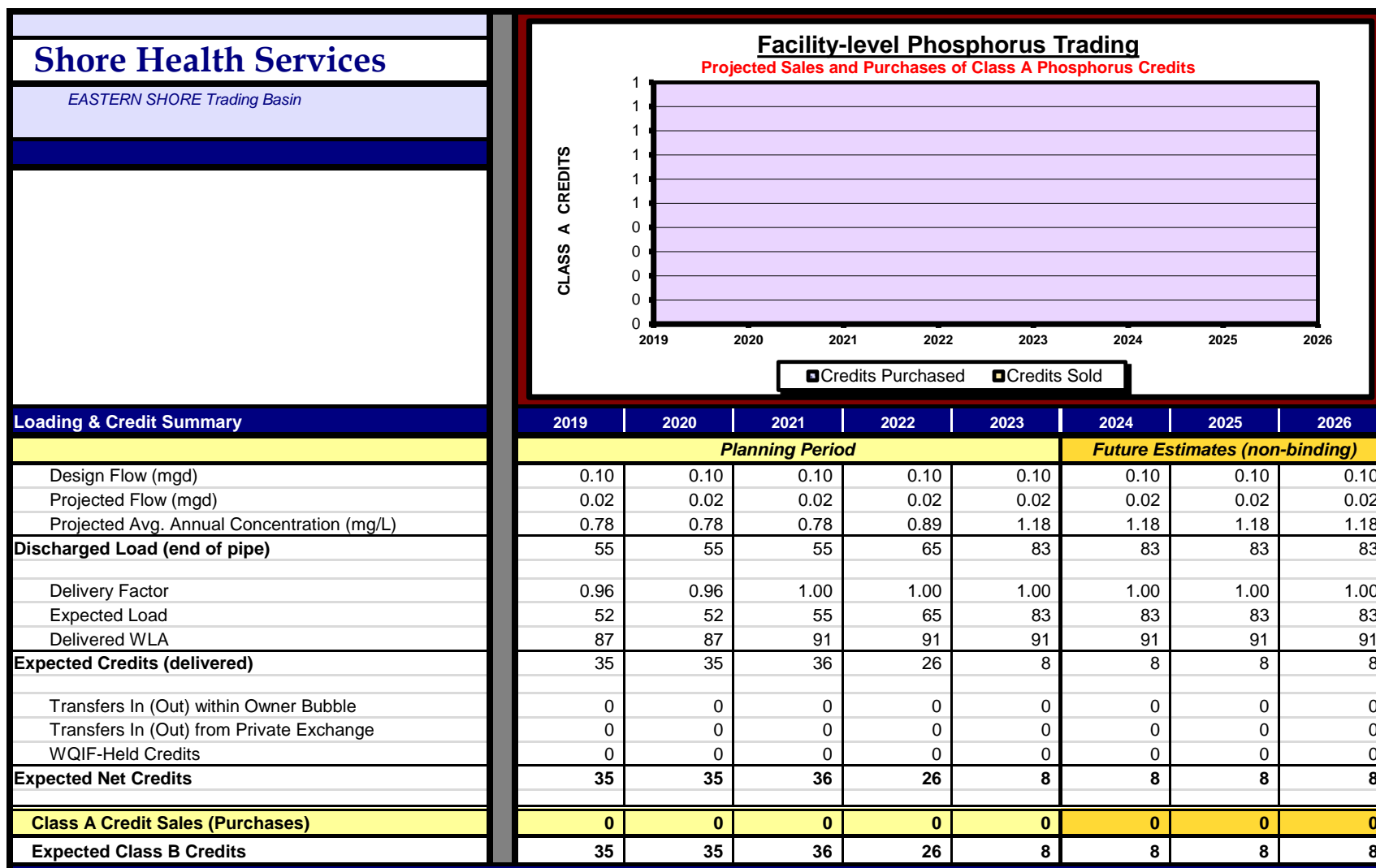


## NITROGEN FACILITY SUMMARY





## PHOSPHORUS FACILITY SUMMARY



## NITROGEN FACILITY SUMMARY

<div>Tangier Island</div> <div>EASTERN SHORE Trading Basin</div>	<div>Facility-level Nitrogen Trading</div> <div>Projected Sales and Purchases of Class A Nitrogen Credits</div>							
	Loading & Credit Summary							
	Design Flow (mgd)	0.10	0.10	0.10	0.10	0.10	0.10	0.10
	Projected Flow (mgd)	0.06	0.06	0.06	0.06	0.06	0.06	0.06
	Projected Avg. Annual Concentration (mg/L)	12.00	12.00	12.00	12.00	12.00	12.00	12.00
Discharged Load (end of pipe)	2,193	2,193	2,193	2,193	2,193	2,193	2,193	2,193
Delivery Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load	2,193	2,193	2,193	2,193	2,193	2,193	2,193	2,193
Delivered WLA	1,218	1,218	1,218	1,218	1,218	1,218	1,218	1,218
Expected Credits (delivered)	(975)	(975)	(975)	(975)	(975)	(975)	(975)	(975)
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange*	975	975	975	975	975	975	975	975
WQIF-Held Credits	0	0	0	0	0	0	0	0
Expected Net Credits	0	0	0	0	0	0	0	0
Class A Credit Sales (Purchases)	0	0	0	0	0	0	0	0
Expected Class B Credits	0	0	0	0	0	0	0	0

\* Represents private trade with Tyson Foods-Temperanceville

## PHOSPHORUS FACILITY SUMMARY

Tangier Island

EASTERN SHORE Trading Basin

Facility-level Phosphorus Trading

Projected Sales and Purchases of Class A Phosphorus Credits

CLASS A CREDITS

2019

2020

2021

2022

2023

2024

2025

2026

Credits Purchased

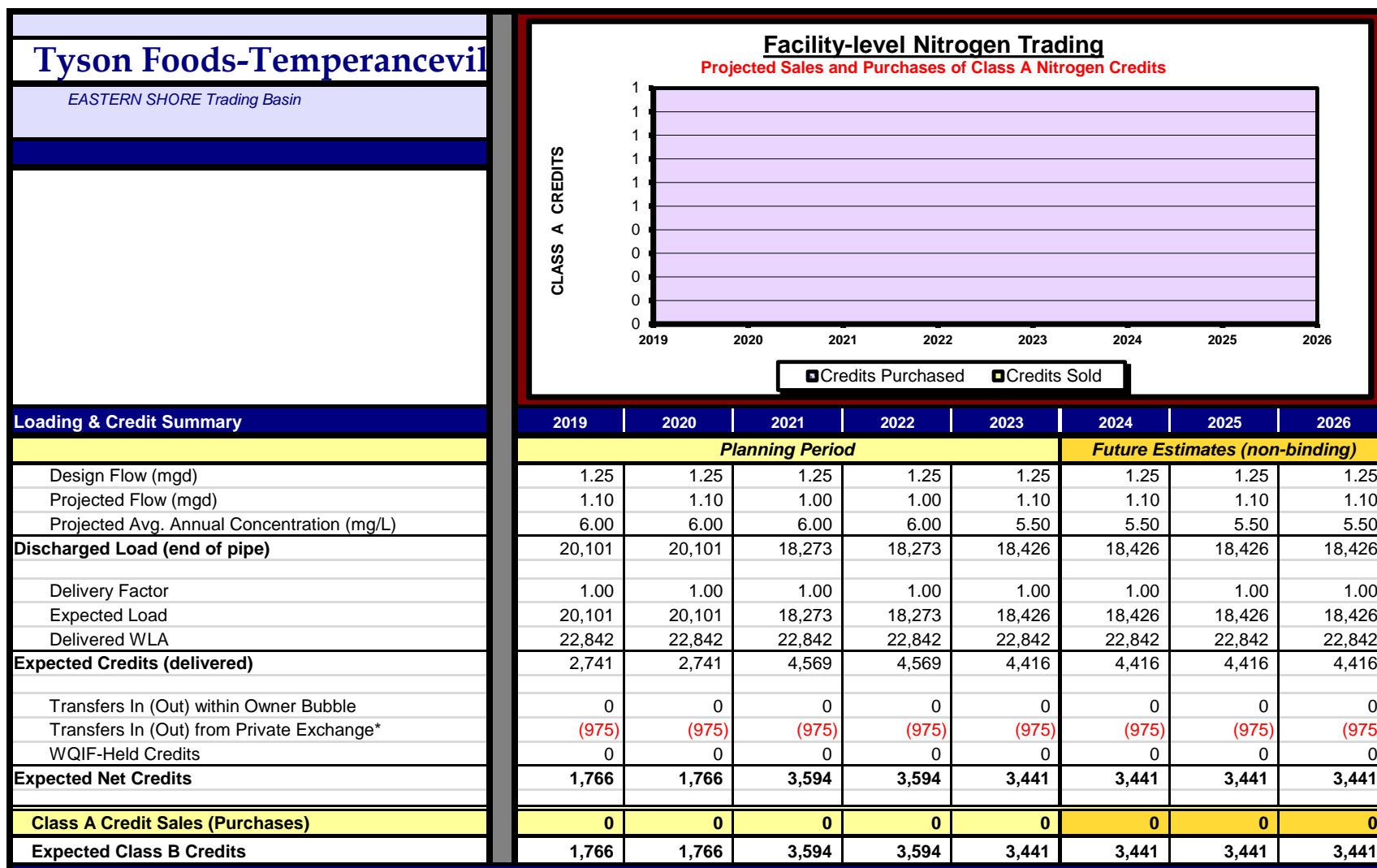
Credits Sold

Loading & Credit Summary

	2019	2020	2021	2022	2023	2024	2025	2026
	Planning Period					Future Estimates (non-binding)		
Design Flow (mgd)	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
Projected Flow (mgd)	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Projected Avg. Annual Concentration (mg/L)	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80
Discharged Load (end of pipe)	329	329	329	329	329	329	329	329
Delivery Factor	0.96	0.96	1.00	1.00	1.00	1.00	1.00	1.00
Expected Load	316	316	329	329	329	329	329	329
Delivered WLA	87	87	91	91	91	91	91	91
Expected Credits (delivered)	(229)	(229)	(238)	(238)	(238)	(238)	(238)	(238)
Transfers In (Out) within Owner Bubble	0	0	0	0	0	0	0	0
Transfers In (Out) from Private Exchange*	229	229	238	238	238	238	238	238
WQIF-Held Credits	0	0	0	0	0	0	0	0
Expected Net Credits	0	0	0	0	0	0	0	0
Class A Credit Sales (Purchases)	0	0	0	0	0	0	0	0
Expected Class B Credits	0	0	0	0	0	0	0	0

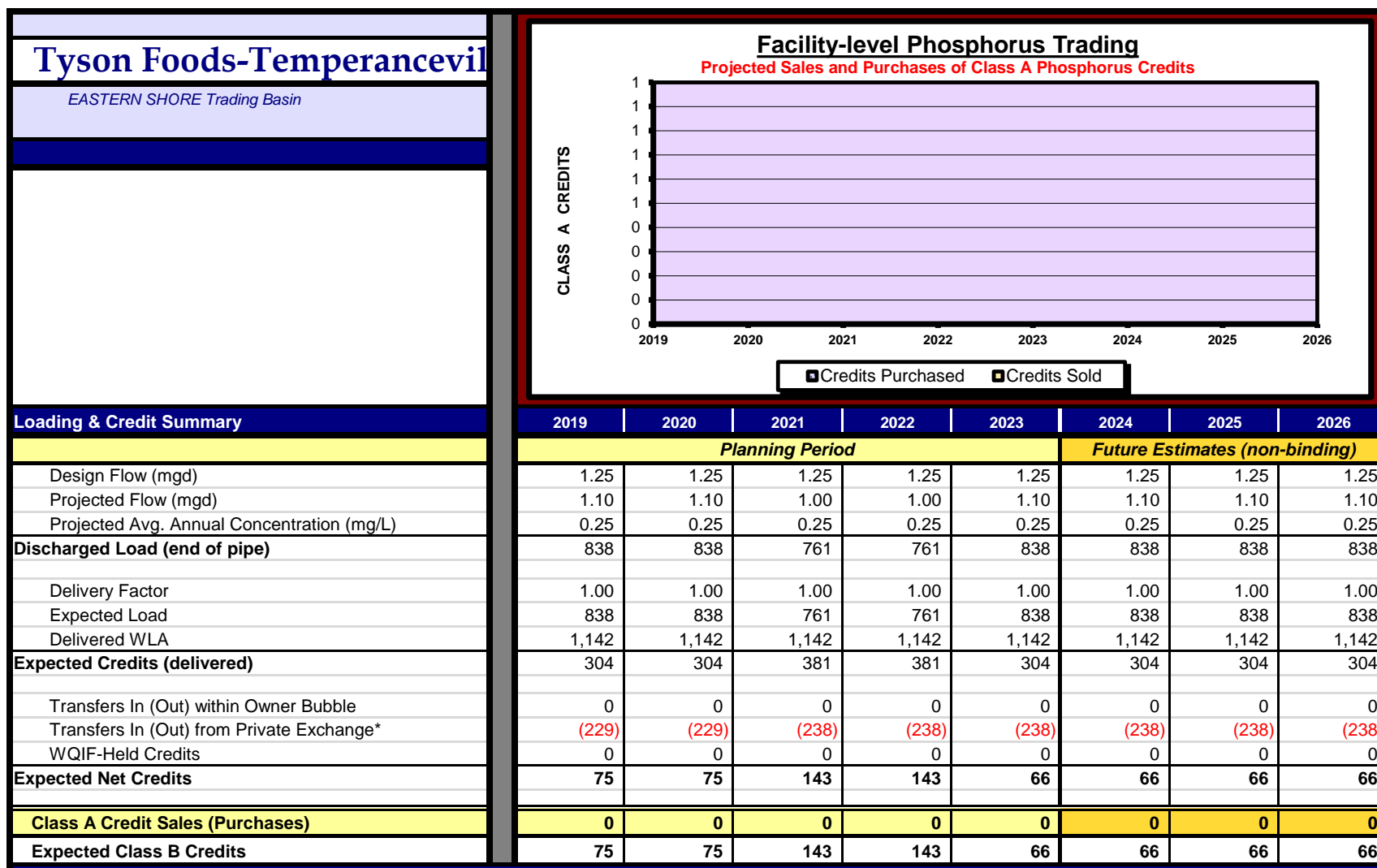
\* Represents private trade with Tyson Foods-Temperanceville

## NITROGEN FACILITY SUMMARY



\* Represents private trade with Tangier Island

## PHOSPHORUS FACILITY SUMMARY



\* Represents private trade with Tangier Island

## SECTION 7

# Credit Exchange Special Conditions

*For the Nutrient Credit Exchange Program to be successful in delivering compliance and cost savings, both for Virginia as a whole and for local ratepayers, Virginia business owners, and state taxpayers (WQIF) funding the Chesapeake Bay cleanup, the Exchange Program must attract Participants and give those Participants comfort sufficient for them to engage in a robust level of trading. During the Exchange Compliance Plan development process, a common theme from potential Participants has been the need for specific assurances that good faith participation in the Exchange Program will not result in VPDES non-compliance or contractual liability to third parties, whether due to regulatory deadlines that Participants cannot meet due to construction challenges (as in the case of potential Class A Sellers) or due to acts of third parties (as in the case of potential Class A Buyers relying on timely Credit availability). This section specifies Credit Exchange Special Conditions designed to help provide the necessary conditions for success. This section is unchanged substantively from the Exchange Compliance Plan 2018 Annual Update.*

## 7.1 Schedule of Compliance

This Section 7.1 is based on DEQ's approval letter dated September 7, 2007 from E. Gilinsky, Ph.D., Director, Division of Water Quality, DEQ, to M. Haley, President of The Exchange (the "2007 DEQ Approval Letter") (attached as Appendix A). While the following procedure was originally developed for purposes of meeting the initial January 1, 2011 compliance schedule, it is retained here for its potential relevance going forward. From time to time, the Watershed General Permit includes compliance schedules, so the same procedure will apply in the event of other future compliance schedules as well.

### July 31, 2007 Recommendation and Procedure (Information Only)

The July 31, 2007 plan recommended and was premised upon an aggressive tributary-parameter schedule (January 1, 2011 effective date of final effluent limits for Nitrogen and Phosphorus in all tributaries, except the Potomac-Shenandoah where the date would be January 1, 2013) and an implementation approach compliant with the general "as soon as possible" standard to be administered by DEQ, as follows: "Effective date for any tributary-parameter shall be extended by the DEQ Director up to but no later than December 31, 2013 based on justification provided in accordance with scheduling factors established by Virginia Code section 62.1-44.19:14 C 2 or other good cause shown."

This implementation approach was recommended in lieu of the alternative of an *across-the-board* period (12 to 24 months) previously recommended under the statutory scheduling factors. The overall benefit of this approach was that it was intended to provide for both the shortest feasible schedule for facility construction and successful startup of the Nutrient Credit Exchange Program. The specific individual benefits of this approach included: (1) this schedule adjustment may only be exercised for good cause shown, (2) the finding of good cause as well as the specific length of any adjustment are both decisions made by the DEQ Director (not by

The Exchange or any of its Participants or other permittees), and (3) it establishes a mechanism by which DEQ has the ability to make timely schedule adjustments where good cause exists.

### Compliance Schedule Procedure under 2007 DEQ Approval Letter

In the 2007 DEQ Approval Letter, DEQ explained its finding that the 2011 compliance deadline should be retained at that time for both parameters in all five basins and, thus, DEQ disapproved the detailed implementation approach summarized above in this Section 7.1. In reaching this conclusion, however, DEQ acknowledged The Exchange's main concern when DEQ stated: "We share your concern with the completion of so many projects on such a tight timeline. However, at this early date it is not possible to determine how quickly individual construction projects will proceed and what the actual capabilities of the upgraded facilities will be."

Similarly, a September 12, 2007 letter from D. Paylor, Director, DEQ, to M. Haley, President of The Exchange (attached as Appendix D), also indicates that "it will be a challenge to complete so many projects on such a tight timeline, and we remain committed to working with you to shepherd these projects to completion."

The 2007 DEQ Approval Letter sets forth the following two-step implementation approach in lieu of that previously recommended by The Exchange:

1. **Monitor & Evaluate** – Future annual compliance plan updates and DEQ's semi-annual WQIF progress reports will be used along with the scheduling factors in the Virginia Code and the "as soon as possible" criterion to evaluate the need for basin schedule extensions.
2. **Adjust as Needed** – Should it prove necessary, DEQ will initiate amendment to the permit under the Administrative Process Act to make appropriate revisions to the schedule.

This procedure is also generally set forth in the Chesapeake Bay and Virginia Waters Clean-Up Plan Progress Report submitted by the Secretary of Natural Resources of the Commonwealth of Virginia to House Committee on Agriculture, Chesapeake and Natural Resources, House Appropriations Committee, Senate Committee on Agriculture, Conservation and Natural Resources, and the Senate Finance Committee (October 2007) at page 3.

Accordingly, the above two-step implementation approach shall be the operative procedure for evaluating and adjusting the compliance schedule.

## 7.2 Initial Upgrade Delays Despite Participant's Best Efforts

The focus of the Exchange Compliance Plan was on achieving initial compliance. A large number of concurrent nutrient removal upgrades were required, and similar activities were underway throughout the Chesapeake Bay region in other states. Construction projects were occurring at a period where the general construction market (not only wastewater treatment) was in a period of very high demand for professional engineers, skilled and unskilled labor, and critical materials. Prices were increasing sharply. State government was also experiencing this in key sectors such as highway and school construction.

During Exchange Compliance Plan development, owners of larger facilities such as those that either must upgrade for the basin to achieve compliance (because the facility is a large source) or which are expected to have lower unit cost upgrades (dollars per pound removed), voiced reluctance to commit to sell Class A Credits because compliance with the initial compliance schedule deadlines was partially or significantly beyond their reasonable control, especially as compared to the January 1, 2011 initial compliance deadlines in the General Permit. Accordingly, to promote and secure the participation of these facilities, The Exchange did not intend to impose its otherwise generally applicable credit shortfall policy under these circumstances. This meant that in a shortfall situation in the startup years, there was a risk that Buyers waiting on Credit availability may not have Credits available through The Exchange, if one or more linchpin projects were delayed in completing construction. A condition of this Exchange Compliance Plan is that neither the delayed Seller nor the waiting Buyer will be deemed to be in non-compliance or subject to enforcement action.

### 7.3 Timely Regulatory Approvals

One factor that impacts basin-level compliance is timely review and approval of permits, WQIF grant agreements, and engineering documents by DEQ. This Exchange Compliance Plan is premised on timely action by DEQ, including the standard turnaround times for engineering documents as specified in 9 VAC 25-790-80 C (generally 30 day turnaround deadline for technical evaluations of engineering documents).

### 7.4 Requested Changes Resulting From Regulatory Review

The Participants have elected to participate in this multi-party Exchange Compliance Plan on the assumption that the Exchange Compliance Plan would be accepted and approved by DEQ (and any other relevant state and federal authority) in the form presented or in a substantially similar form with no material adverse changes. In the event of any material adverse change, The Exchange reserves the right to revise this Exchange Compliance Plan and each Participant reserves the right to modify its position in it, or withdraw from it, upon notice to DEQ and The Exchange within 60 days of notice of any material adverse change in the content of the approved Exchange Compliance Plan.

### 7.5 WQIF Grant Denial

Numerous facility upgrades covered in Sections 2 through 6 are premised upon execution of a WQIF Grant Agreement between DEQ and the Participant for the partial funding of nutrient removal technology to be installed. Since 2005, the WQIF statute has provided at Virginia Code section 10.1-2131 B that DEQ “shall enter into grant agreements with all facilities designated as significant dischargers or eligible nonsignificant dischargers that apply for grants.” This Section 7.5 is necessary to address the amendment at Virginia Code section 10.1-1186.01 G to establish a limited exception, as follows:

Notwithstanding the provisions of subsection B of § [10.1-2131](#), the Director of the Department of Environmental Quality shall not be required to enter into a grant agreement with a facility designated as a significant discharger or eligible nonsignificant discharger if the Director determines that the use of nutrient credits in accordance with the Chesapeake Bay Watershed Nutrient Credit



Exchange Program (§ [62.1-44.19:12](#) et seq.) would be significantly more cost-effective than the installation of nutrient controls for the facility in question.

This Exchange Compliance Plan is conditioned on the execution of WQIF Grant Agreement for each WQIF eligible project set forth herein. The Exchange and the Participants reserve the right to amend this plan in the event that, pursuant to section 10.1-1186.01, DEQ declines to enter into a WQIF Grant Agreement for such a project.

## **7.6 WQIF Credit Availability**

Access to WQIF Credits in the event of a Credit shortfall situation is an essential element for providing the certainty and comfort level required for trading-based compliance plans. Accordingly, The Exchange Compliance Plan is conditioned on the SWCB and DEQ ensuring the continued availability of Credits through the WQIF at or below the prices currently specified in the General Permit.

## **7.7 Annual Updates**

The Exchange and the Participants reserve the right to update and amend this Exchange Compliance Plan on an annual basis consistent with applicable laws and regulations.

## **7.8 Effluent Nutrient Concentrations**

Concentrations contained herein are estimates for information purposes only and are not to be used as a basis for any regulatory decisions.

SECTION 8

## Credit Exchange Policy



# **CREDIT EXCHANGE POLICY FOR THE PURCHASE AND SALE OF CHESAPEAKE BAY NUTRIENT CREDITS**

## **ARTICLE I PURPOSE**

This Credit Exchange Policy (this “Policy”) of the Virginia Nutrient Credit Exchange Association, Inc. (the “Nutrient Exchange”) is adopted pursuant to Article VII of the Bylaws for the purpose of coordinating and facilitating the participation of its Members in Virginia’s Chesapeake Bay Nutrient Credit Exchange Program established by Virginia Code section 62.1-44.19:12 *et seq.* Accordingly, this Policy is intended to provide a framework for the Exchange of Credits by and among the Members and, in addition to other benefits, to satisfy the standard requirement of Virginia Water Quality Improvement Fund Grant Agreements made pursuant to Virginia Code section 10.1-2117 *et seq.* that the grantee make available for Exchange any Credits remaining after complying with its Watershed General Permit limits.

## **ARTICLE II DEFINITIONS**

Unless otherwise defined below or a different meaning is intended by the usage herein, all terms shall have the same definition as provided in section 9 VAC 25-820-10 of the Watershed General Permit.

**Actual Class B Credits** – In the Reconciliation Year, the quantity of Credits remaining for the Permitted Facility after adjusting Actual Net Credits for Class A Credit purchases and sales for the immediately preceding Compliance Year. This quantity equals Actual Net Credits plus any Class A Credit purchases and minus any Class A Credit sales for the Compliance Year.

**Actual Credits** – Credits actually generated during the Compliance Year prior to adjusting for Preliminary Uses of Credits. Actual Credits equal Delivered WLA minus Actual Load.

**Actual Load** – The Delivered Load actually discharged during the Compliance Year for one or more Permitted Facilities.

**Actual Net Credits** – Actual Credits minus the quantity of Credits not available due to Preliminary Uses of Credits.

**Board of Governors (or Board)** – The board of directors of the Nutrient Exchange.

**Buyer** – A Participant that purchases Credits for a given Compliance Year.

**Class A Buyer** – A Participant that requests the availability of, and agrees in advance to purchase, a specific quantity of Credits in accordance with this Policy. Except as otherwise

provided herein, a Class A Buyer is committed to purchasing its requested and agreed amount of Class A Credits, even if the Class A Buyer actually needs a lesser amount based on actual performance of its Permit Facility in a Compliance Year.

**Class A Credits** – Credits for which an agreement for sale and purchase in a specific quantity is made in advance in accordance with this Policy.

**Class A Pledge** – The quantity of Class A Credits that the Seller specifies and agrees to sell to the Nutrient Exchange as Class A Credits in accordance with this Policy.

**Class A Seller** – A Participant that agrees in advance to sell Class A Credits to the Nutrient Exchange in accordance with this Policy. Except as otherwise provided herein, a Class A Seller is responsible for making up any shortfall in its agreed amount of Class A Credits for a given Compliance Year and completing such sale.

**Class B Credits** – Credits for which no agreement for sale and purchase in a specific quantity is made in advance but which are pledged to the Nutrient Exchange in accordance with this Policy.

**Clearing Account** – An account of the Nutrient Exchange used for segregating funds from Credit Exchanges from other funds of the Nutrient Exchange.

**Compliance Year** – Any specific calendar year for which Exchanges are planned or executed.

**Credit** – Each pound of TN or TP by which the Expected Load (projections) or Delivered Load (actual) is less than the Delivered WLA for a Permitted Facility (or Permitted Facility Bubble). Note that while Credits can exist only in positive quantities, for planning and implementation purposes certain Credit-related values may be stated as negative quantities. For example, when a Permitted Facility's Expected Load is projected to exceed its Delivered WLA, the Plan will show a negative quantity of Expected Credits. Additional examples may include Expected Net Credits, Actual Credits, Actual Net Credits, and Actual Class B Credits.

**Delivered WLA** – The TN or TP WLA assigned to a Permitted Facility, either under the Water Quality Management Planning ("WQMP") Regulation (9 VAC 25-720) or otherwise, and adjusted by the applicable delivery factor under the Watershed General Permit and expressed as pounds per year.

**Delivered Load** – The TN or TP load discharged by a Permitted Facility during a Compliance Year, adjusted by the applicable delivery factor under the Watershed General Permit and expressed as pounds per year.

**DEQ** – The Virginia Department of Environmental Quality or, where appropriate, the State Water Control Board to which the Department serves as staff.

**Designated Representative** – A person who is a fulltime employee of, and is designated in writing by, the Participant to act on its behalf.

**Exchange** – The purchase and sale of a Credit of any class.

**Exchange Compliance Plan (or Plan)** – The plan submitted by the Nutrient Exchange to DEQ pursuant to 9 VAC 25-820-40 A as updated periodically pursuant to 9 VAC 25-820-40 B and 9 VAC 25-820-70 Part I D of the Watershed General Permit.

**Exchange Compliance Plan Update (or Plan Update)** – The update of the Exchange Compliance Plan required pursuant to 9 VAC 25-820-40 B and 9 VAC 25-820-70 Part I D of the Watershed General Permit.

**Expected Class B Credits** – The quantity of Credits projected to be remaining for a Permitted Facility after adjusting Expected Net Credits for Class A Credit sales for the current or any future Compliance Year. This quantity equals Expected Net Credits minus any Class A Credits committed by a Class A Seller for a Compliance Year.

**Expected Load** – The projected Delivered Load for a given Compliance Year for one or more Permitted Facilities.

**Expected Credits** – The amount of Credits projected for a given Compliance Year as determined by subtracting the Expected Load from the Delivered WLA.

**Expected Net Credits** – Expected Credits minus the quantity of Credits projected to not be available due to Preliminary Uses of Credits.

**In-Bubble Exchange** – A Preliminary Use of Credits consisting of Credit use by and among the Permitted Facilities within a Permitted Facility Bubble included in the Exchange Compliance Plan. In accordance with 9 VAC 25-820-70 Part I B 2 e of the Watershed General Permit, In-Bubble Exchanges are not Exchanges or credit acquisitions as described in 9 VAC 25-820-70 Part I J 2 of the Watershed General Permit.

**Neutral Participant** – A Participant which projects a positive quantity of Expected Net Credits for its Permitted Facility in a given Compliance Year, but which has not elected to be a Class A Seller for that Compliance Year.

**Non-Participant** – An owner or operator of a Permitted Facility that is not a Participant.

**Participant** – A Member owner or operator of a Permitted Facility included in the Exchange Compliance Plan which has executed the Nutrient Credit Services Agreement.

**Permitted Facility** – A facility authorized to discharge under the Watershed General Permit. The singular refers to the plural (Permitted Facilities) where appropriate. This term also refers to a Permitted Facility Bubble where appropriate.

**Permitted Facility Bubble** – Multiple Permitted Facilities under common ownership or operation that are subject to aggregated WLAs pursuant to 9 VAC 25-820-70 Part I B 2 of the Watershed General Permit.

**Planning Period** – The rolling five-year period covered by the Exchange Compliance Plan (or Plan Update) beginning with the year in which the Plan is due to be submitted to DEQ. For example, for the Exchange Compliance Plan 2008 Annual Update due and submitted to DEQ on February 1, 2008, the Planning Period is January 1, 2008 through and including December 31, 2012.

**Preliminary Use of Credits** – Any of the following three planned or actual uses of Credits: In-Bubble Exchange, Private Exchange, or WQIF-Held.

**Private Exchange** – A Preliminary Use of Credits consisting of an Exchange planned or executed directly between or among Participants or Non-Participants rather than through the Nutrient Exchange.

**Reconciliation** – The process for executing Exchanges for a Compliance Year.

**Reconciliation Year** – For each Compliance Year, the year immediately following during which time Exchanges for the Compliance Year are executed. For example, for Compliance Year 2011, the associated Reconciliation Year is 2012.

**Seller** – A Participant that supplies Credits for a given Compliance Year.

**TN** – Total nitrogen, a pollutant the discharge of which is authorized and limited under the Watershed General Permit.

**TP** – Total phosphorus, a pollutant the discharge of which is authorized and limited under the Watershed General Permit.

**Watershed General Permit** – The General Virginia Pollutant Discharge Elimination System Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (9 VAC 25-820) issued by the State Water Control Board effective for a five-year permit term beginning January 1, 2007 or as hereafter modified or reissued from time to time. Among other requirements, the Watershed General Permit imposes limitations on the discharge of TN and TP from Permitted Facilities (9 VAC 25-820-70 Part I B), and requires each permittee to submit to DEQ by August 1, 2007 and annually thereafter (currently by each February 1) a compliance plan (9 VAC 25-820-40), either individually or through the Nutrient Exchange, indicating how its facility(ies) will comply with such limitations.

**WLA** – A Wasteload Allocation for TN or TP as established under the Water Quality Management Planning Regulation, 9 VAC 25-720, and implemented through the Watershed General Permit. A WLA may be expressed in pounds per year as either a discharged WLA (*i.e.* end-of-pipe gross pounds) or as a Delivered WLA (*i.e.*, the discharged WLA multiplied by the

delivery factor applicable to the Permitted Facility as specified in the Watershed General Permit).

**WQIF-Held** – Pursuant to 9 VAC 25-820-70 Part I J 2 e of the Watershed General Permit, a Preliminary Use of Credits which consists of setting aside and not using within the Plan certain Credits associated with Permitted Facilities (or a portion thereof) not yet constructed and in operation. Such Credits are held in the Water Quality Improvement Fund administered by DEQ.

### **ARTICLE III GUIDING PRINCIPLES & GENERAL APPROACH**

3.1 Guiding Principles. This Policy has been developed and is to be implemented in accordance with the following guiding principles adopted by the Nutrient Exchange:

(a) Guiding Principle No. 1: Environment First. The Nutrient Exchange, including its Exchange Compliance Plan and this Policy, is designed to ensure environmental protection first and foremost. Environmental protection is fostered by means of full compliance with the Watershed General Permit issued by DEQ.

(b) Guiding Principle No. 2: Voluntary Participation. Under governing laws and regulations, there is generally no requirement for a Permitted Facility to trade, *i.e.*, Exchange, Credits with any other person. Accordingly, the Nutrient Exchange, including its Exchange Compliance Plan and this Policy, is premised on the voluntary participation of Participants and their Permitted Facilities subject to applicable laws and regulations and the policies and procedures established by the Nutrient Exchange.

(c) Guiding Principle No. 3: Benefits for All. Consistent with the concept of voluntary participation, the Nutrient Exchange, including its Exchange Compliance Plan and this Policy, is designed with the intent of benefitting all Participants whether as a Buyer, Seller or Neutral.

(d) Guiding Principle No. 4: Remember the “Base Case.” This principle is a reminder that the Nutrient Exchange is a first-of-its-kind undertaking with the potential to provide significant benefits including water quality improvement, regulatory flexibility, and economic efficiency compared to the traditional regulatory approach lacking a trading option, and that the Nutrient Exchange intends to operate with this potential for broad benefit in mind.

3.2 General Approach. This Policy is designed to meet the following goals and objectives for the establishment of a successful Exchange Program: (a) a highly-structured, well-planned program, (b) a convenient and reliable Credit Exchange mechanism, (c) a practical legal structure that promotes participation by maintaining a high degree of flexibility for Participants, and (d) a fair and effective pricing methodology.

## **ARTICLE IV COMPLIANCE AND CREDIT EXCHANGE PLANNING**

4.1 Participant-Driven Exchange Compliance Plan. The Nutrient Exchange has developed the Exchange Compliance Plan on behalf of the Participants for each of Virginia's five major river basins in accordance with the Watershed General Permit and intends to update the Plan annually by submittal of Plan Updates to DEQ. The Nutrient Exchange Compliance Plan is now and will continue to be based on the individual data provided by, and individual decisions made by, Participants with respect to their own Permitted Facilities, including revisions to relevant facility-specific information related to Class A Credit and Class B Credit Exchanges or other information, in accordance with the schedule at Attachment A and subject to acceptance by the Nutrient Exchange in accordance with this Policy and further subject to approval by DEQ.

4.2 Five-Year Planning Period. The Plan including any Plan Updates shall cover a rolling five-year Planning Period. For each Planning Period each of the following Plan elements shall be on a firm basis and may not be modified by a Participant except as provided in Section 4.8 (Modifications Within Planning Period): (a) Class A Credit sales and purchases once elected by a Participant, (b) the Class A Credit purchase price paid by a Class A Buyer (Attachment B), and (c) the Participant's commitment pursuant to Section 4.7 (Class B Credit Pledge) to provide to the Nutrient Exchange its Actual Class B Credits. With each Plan Update, Year 1 of the preceding Planning Period shall be dropped (except for purposes of Reconciliation), Year 2 through Year 5 of the preceding Planning Period (Year 1 through Year 4 of the Plan Update) shall remain unchanged with respect to the Plan elements stated in this Section as firm, and a new Year 5 shall be added based on data and information determined by each Participant with respect to its Permitted Facility. For example, in 2012, the Nutrient Exchange, in coordination with the Participants, will conduct the Reconciliation process for Compliance Year 2011 and update the five-year Plan to cover a Planning Period of 2012 through and including 2016, with the new fifth year (2016) based on data and information determined and submitted by each Participant with respect to its Permitted Facility. Without limiting the foregoing, it is nevertheless the intent of the Nutrient Exchange to accommodate through each Plan Update certain modifications related to firm elements of the Plan for the remaining four years of the Planning Period, whenever some or all of such modifications are determined by the Board in its discretion to be feasible and in the best interests of the Nutrient Exchange, as provided below in Section 4.8. Notwithstanding the foregoing provisions of this Section, if DEQ were to extend the schedule of compliance in Part I C 1 of the Watershed General Permit for any tributary (river basin) and parameter combination, the obligation of Participants to execute Exchanges of Credits for Permitted Facilities in such tributary (river basin) and for such parameter (TN or TP) as provided in the Exchange Compliance Plan shall be waived for each year prior to the first year for which compliance is required.

4.3 Annual Participant Data Update. The Nutrient Exchange may request and each Participant shall provide in a timely manner information necessary or useful for updating or otherwise administering the Plan. For purposes of Plan Updates, the Nutrient Exchange anticipates continuing to utilize a Facility Data Checklist. The most recent form of the Facility Data Checklist is attached as Attachment C and may be revised by the Nutrient Exchange from time to time. The Nutrient Exchange anticipates continuing to utilize a Compliance Deadline



Statement prior to the expiration of the schedule of compliance in Part I C 1 of the Watershed General Permit. The most recent form of the Compliance Deadline Statement is attached as Attachment D and may be revised by the Nutrient Exchange from time to time. With respect to the new fifth year of the Planning Period covered by each Plan Update, the Plan shall be based on data and information determined by the Participant during the Plan Update process. To meet applicable regulatory deadlines, Participants shall submit the requested data pursuant to the schedule at Attachment A, which may be revised by the Nutrient Exchange from time to time. Failure to meet submittal deadlines may result in omission of a Participant and its Permitted Facilities from the Plan at the discretion of the Nutrient Exchange.

4.4 Expected Net Credits. For each of its Permitted Facilities included in the Plan, the Participant will be responsible for specifying the Delivered WLA (established by regulation), Expected Load (derived from projected flow and concentration data provided by the Participant), Expected Credits, Preliminary Uses of Credits, and Expected Net Credits. Expected Net Credits is a planning figure only, and no Participant is obligated solely by its specification thereof to generate Credits in a quantity equal to or greater than the Expected Net Credits for the Planning Period.

4.5 Class A Credit Sale Obligations. Participants with Permitted Facilities projecting to generate a positive quantity of Expected Net Credits shall have the option to sell Class A Credits for a Compliance Year in the Planning Period at the premium Class A Credit price. Each such Participant shall specify its Class A Pledge as a quantity of Credits ranging from zero (0) up to the quantity of its Expected Net Credits for each year of the Planning Period, such quantity to be determined in the discretion of the Participant. Such specification shall be made for the full initial Planning Period and thereafter annually for the new fifth year of the five-year Planning Period. The Participant shall be obligated to provide to the Nutrient Exchange such quantity of Class A Credits. The specified quantity of Class A Credits shall be set forth in the Plan. Unless waived pursuant to section 5.10 (Waiver of Class A Credit Sales Obligation), the Participant agrees to sell such quantity of Credits to the Nutrient Exchange regardless of its Actual Net Credits (*i.e.*, a Class A Seller is responsible for making up any shortfall in its agreed amount of Class A Credits for a given Compliance Year and completing such sale). A Participant projecting to generate a positive quantity of Expected Net Credits but electing to make no firm Class A Credit sales obligation (*i.e.*, a Neutral Participant) shall specify a Class A Pledge of zero.

4.6 Class A Credit Purchase Obligations. For Permitted Facilities projecting Expected Net Credits in a negative quantity, to demonstrate a plan for compliance the Participant shall be obligated to purchase Credits in such quantity at the Class A Credit purchase price shown on Attachment B. For example, a Permitted Facility projecting in the 2008 Plan Update to have Expected Net Credits of TN of negative 500 for Compliance Year 2011 shall be obligated to purchase 500 TN Credits at the Class A Credit price in effect for 2011 (\$2.00 per Credit). This transaction shall be executed during the Reconciliation Year at which time the Credits shall be transferred and the price shall be paid. The Exchange Compliance Plan shall plan to meet this projected demand addressed in this Section through Class A Credit sales obligations under Section 4.5 to the extent available; however, to the extent that sufficient Class A Credits are not available, the Plan may address this demand by means of Class B Credits pledged by Participants. The Credit prices paid by a Buyer as shown on Attachment B are firm

for the Planning Period and shall be updated annually to include such price for the new fifth year of the Plan Update.

4.7 Class B Credit Pledge. By participating in the Exchange Compliance Plan, each Participant pledges one hundred percent of its Expected Class B Credits and agrees to transfer one hundred percent of its Actual Class B Credits from its Permitted Facilities to the Nutrient Exchange. The quantity of Expected Class B Credits is a projection only and it accommodates Preliminary Uses of Credits, including Private Exchanges planned and disclosed by the Participant in accordance with Section 4.9. Without limiting this pledge requirement, it is acknowledged and understood that Actual Class B Credits are anticipated to vary from the projection of Expected Class B Credits and that the Participant has no obligation to provide Actual Class B Credits in the same quantity as Expected Class B Credits, so long as the Participant transfers all of its Actual Class B Credits to the Nutrient Exchange. Among other purposes, it is the intent of this Section to enable Participants, which have entered into or will enter into a Virginia Water Quality Improvement Fund Grant Agreement with DEQ (*i.e.*, the owners of eligible municipal wastewater treatment plants) to satisfy the following standard provision of the typical grant agreement: “To aid in implementing the Nutrient Credit Exchange Program, the Grantee shall make all Point Source Nitrogen and Phosphorus Credits generated in a calendar year available for nutrient allocation compliance.” It is also the intent of this Section to include as Actual Class B Credits those Credits not identified as Expected Class B Credits due to any Preliminary Use of Credits but which are in fact available for Exchange through the Nutrient Exchange during the Reconciliation.

4.8 Modifications Within Planning Period. Notwithstanding the firm commitments for Class A Credits and Class B Credits provided in this Article IV, it is the intent of the Nutrient Exchange to accommodate through each Plan Update requests for modifications affecting the firm elements of the previous Planning Period, provided that the Board determines, in its discretion, that such modification is not reasonably expected to have a material adverse effect on the Nutrient Exchange or its Participants. Consistent with the guiding principles described above, the fact that a modification would result in a decrease in funds from Credit sales shall not preclude the Board from determining that a modification would not have a material adverse effect. In the event of multiple competing modification requests, (i) requests of existing Participants shall have priority over requests of potential new Participants, and (ii) to the extent that it is not feasible to honor all modification requests of existing Participants, the Nutrient Exchange generally intends to address the requests of existing Participants on a pro rata basis with respect to Credits. In order to manage requests for modifications within the Planning Period efficiently and fairly, the Nutrient Exchange shall establish annually a date by which Participants shall submit such requests. The modifications requested by any Participant, if accommodated in the Plan Update in whole or in part, shall be binding on such Participant.

(a) Class A Credit Sale Obligations. Notwithstanding the firm basis of Class A Credit sale obligations, a Class A Seller may decrease its Class A Credit sale obligations through the Plan Update to the extent the Board determines that a sufficient supply of Class A Credits is projected to remain to meet the existing Class A Credit demand of the existing Class A Buyers, and the Board, in its discretion, may accommodate further decreases taking into consideration Expected Class B Credit projections. Any Participant may increase its Class A

Credit sale obligation so long as the resulting Class A Credit supply does not exceed Class A Credit demand.

(b) Class A Credit Purchase Obligations. Notwithstanding the firm basis of Class A Credit purchase obligations, a Class A Buyer may decrease its Class A Credit purchase obligations to the extent the Board determines that Class A Credit demand exceeds Class A Credit supply. Any Participant may increase its Class A Credit purchase obligation to the extent of Class A Credit supply, and the Board, in its discretion, may accommodate further increases taking into consideration Expected Class B Credit projections.

(c) Class B Credits. As provided above in Section 4.7, Expected Class B Credits is a projection only and the Participant's obligation with respect to Class B Credits is limited to providing its Actual Class B Credits to the Nutrient Exchange. Accordingly, through each Plan Update, the Participant at its discretion may modify its projection of Expected Class B Credits for each and every year of the five-year Planning Period covered by the Plan Update.

(d) New Participants. The Nutrient Exchange intends to consider the admission of new Participants depending on whether the Nutrient Exchange anticipates a surplus of Credits or projects a need for or desires additional Credits during the Planning Period. Admission of new Participants shall be at the discretion of the Board and generally subject to the following conditions. When the Plan indicates a surplus of Class A Credits, a new Participant may be included subject to the condition that it may not sell Class B Credits until Year 3 and Class A Credits until Year 5 of the Plan Update that first includes the new Participant. When the Plan indicates a need for additional Class A Credits, a new Participant may be included subject to the condition that it may not purchase Credits until Year 5 of the Plan Update that first includes the new participant. These conditions may be waived or modified in whole or in part by the Board in its discretion.

4.9. Private Exchanges. Sections 4.4 (Expected Net Credits) and 4.7 (Class B Credit Pledge) notwithstanding, to facilitate adequate planning each Participant shall provide reasonable advance notice to the Nutrient Exchange of all Private Exchanges to which it is or will be a party. Such notice shall be made by the deadline in Attachment A for submitting the Facility Data Checklist during the Plan Update process and shall be effective for any Private Exchange for the Compliance Year beginning the next January 1 following such notice (or for any subsequent Compliance Year). The notice shall be on a form to be provided by the Nutrient Exchange and shall identify all parties and the quantity of Credits subject to the Private Exchange. For example, if a Participant desires to enter into a new Private Exchange for Compliance Year 2011, under the current schedule at Attachment A notice would be required by November 1, 2010 and such Private Exchange would be included in the Plan Update covering the Planning Period of Compliance Years 2011 through 2015. Nothing in this Section 4.9 shall affect the firm commitment as to Class A Credit purchases and sales once made by a Participant.

4.10 DEQ Approval. The Nutrient Exchange's goal is to maintain the Exchange Compliance Plan in a manner and form that best serves its Participants and complies with the terms and conditions of the Watershed General Permit. In the event that DEQ were to disapprove a Plan Update in whole or in part, the Nutrient Exchange shall be responsible only for

continuing to endeavor, in consultation with the Participants, to obtain DEQ approval pursuant to 9 VAC 25-820-40 B.

## **ARTICLE V CREDIT EXCHANGE RECONCILIATION**

5.1 Administration of and Participation in Reconciliation. Beginning in 2012 for Compliance Year 2011, the Nutrient Exchange will administer and the Participants will participate in an annual Reconciliation pursuant to the Plan and this Policy for the preceding Compliance Year.

5.2 Annual Permitted Facility Reports. In accordance with the schedule at Attachment A, each Participant shall annually submit to the Nutrient Exchange a copy of the Participant's Annual Report to DEQ required by Part I F of the Watershed General Permit and such other information as may be reasonably requested by the Nutrient Exchange in administering the Reconciliation.

5.3 Initial Reconciliation Report. In accordance with the schedule at Attachment A, the Nutrient Exchange will prepare and distribute to the Participants the Initial Reconciliation Report for the immediately preceding Compliance Year. On a Permitted Facility and river basin-level basis for all Participants, the report shall present in ledger format an accounting of the generation and transfer of Credits within the Nutrient Exchange and among its Participants. The report shall specify for each Permitted Facility its Delivered WLA, Actual Load, Actual Credits, Preliminary Uses of Credits, Actual Net Credits, Class A Credit sales and purchases, and Actual Class B Credits, Credit prices, charges to Buyers, and revenues to Sellers. As applicable, the report will reflect application of the policies and procedures in Sections 5.9 (Initial Upgrades), 5.10 (Waiver of Class A Credit Sales Obligation), 5.11 (Option to Purchase Additional Credits During Reconciliation), and 5.12 (Credit Shortfall Management Procedures).

5.4 Credit Exchanges and Confirmations. The transfer of Credits from Sellers to the Nutrient Exchange, and from the Nutrient Exchange to Buyers, shall be implemented as follows.

(a) Credit Transfers from Sellers. Each year beginning 2012 (or one year later for each year by which DEQ extends the schedule of compliance for any tributary (river basin) and parameter (TN or TP) combination beyond January 1, 2011), Participants shall transfer to the Nutrient Exchange in accordance with the Initial Reconciliation Report and the schedule at Attachment A (i) the quantity of Class A Credits to which they have committed as Sellers and (ii) the quantity of their Actual Class B Credits, if any. Such transfer shall be effective without further action by the Participant and shall be confirmed by the Participant through execution by its Designated Representative of, and submittal to the Nutrient Exchange of, the Seller's Credit Exchange Confirmation Form (Attachment E).

(b) Credit Transfers to Buyers. Each year beginning 2012 (or one year later for each year by which DEQ extends the schedule of compliance for any tributary (river basin) and parameter (TN or TP) combination beyond January 1, 2011), the Nutrient Exchange shall

transfer to Buyers in accordance with the Initial Reconciliation Report and the schedule at Attachment A the quantity of Credits committed to and requested by such Buyers subject to the terms and limitations of this Policy. Such transfer shall be accomplished and confirmed by the Nutrient Exchange through execution and submittal to Buyers of the Buyer's Credit Exchange Confirmation Form (Attachment F). In addition, the Nutrient Exchange shall invoice each Buyer for Credit purchases in accordance with the schedule at Attachment A, and each Buyer shall pay such invoice within forty-five (45) days of the invoice date. Failure to pay such invoice within such time shall require payment by the Participant of an administrative charge of one hundred dollars (\$100.00) plus ten percent (10%) of the amount of the invoice.

5.5 Sales of Surplus Credits to Non-Participants. For any Compliance Year and associated Reconciliation Year, for any river basin and parameter (TN or TP) combination, if the Nutrient Exchange has satisfied all of the needs for Credits for Participants as specified in the Exchange Compliance Plan or as otherwise requested by Participants for Watershed General Permit compliance purposes, and has remaining Credits, the Nutrient Exchange may sell such remaining Credits, in the discretion of the Board, to any Non-Participants requesting and committing to the purchase of such Credits subject to terms established by the Board in accordance with this Policy. The revenue from any Credit sales to Non-Participants or others shall be distributed to the Participants in the manner provided in Section 5.8.

5.6 Final Reconciliation Report. In accordance with the schedule at Attachment A, the Nutrient Exchange will prepare and distribute to the Participants the Final Reconciliation Report for the immediately preceding Compliance Year to reflect any adjustments subsequent to the Initial Reconciliation Report for sales of surplus Credits to Non-Participants or as otherwise may be appropriate.

5.7 Sources of Funds. The sources of funds for the Nutrient Exchange's purchase of Credits from Sellers shall be the funds paid by Buyers, the funds paid by any Non-Participants or others purchasing Credits through the Nutrient Exchange, and any other revenues accruing to the Nutrient Exchange that the Board designates for this purpose.

(a) Clearing Account. All such funds shall be segregated for accounting purposes from any other funds of the Nutrient Exchange in a Clearing Account for the purposes of holding prior to distribution and of distributing such funds to Sellers in the manner provided in this Policy.

(b) Prices Paid by Buyers and Non-Participants. The prices for Credits shall be (i) for Buyers of Credits in the quantities scheduled in the Plan as Class A Credit purchases the Class A Credit price on Attachment B, (ii) for Participants making additional Credit purchases beyond those scheduled in the Plan as Class A Credit purchases, the Class A Credit Price from Attachment A multiplied by a premium of 1.5, and (iii) for any Non-Participant or others for purchases as provided in Section 5.5, the Class A Credit Price from Attachment A multiplied by a premium which shall be established by the Board but which shall not be less than 2.0, unless the Board in its discretion determines that a lesser premium is in the best interests of the Nutrient Exchange and its Participants.

5.8 Disbursement of Funds to Sellers. The Nutrient Exchange shall disburse funds to Sellers from the Clearing Account as follows.

(a) Timing. Funds shall be disbursed to Sellers each Reconciliation Year in accordance with the schedule at Attachment A, or as soon thereafter as may be practical.

(b) Amounts Paid to Sellers. Ninety (90) percent of the amount in the Clearing Account and due to the Nutrient Exchange from Buyers for each Compliance Year in the Reconciliation Year shall be paid to the Class A Sellers, pro rata in proportion to the quantity of such Class A Credits transferred by each. The remaining ten (10) percent shall be paid to those Participants transferring Class B Credits to the Nutrient Exchange, pro rata as to the quantity of such Class B Credits transferred by each. However, if under the preceding calculation the amount paid by the Nutrient Exchange for each Class B Credit would exceed the amount paid by the Nutrient Exchange for each Class A Credit, the amount paid for Class A and Class B Credits shall be equal and shall be paid to Sellers pro rata in proportion to the quantity of Credits transferred by each.

(c) Clearing Account Shortfalls Due to Non-Payment of Buyers. To the extent that any Buyer or other purchaser of Credits from the Nutrient Exchange fails to remit to the Nutrient Exchange any amounts for Credits when due, and such shortfall interferes with the distribution of funds as provided herein, in addition to the administrative charge provided in Paragraph 5.4(b) the Board may in its discretion (i) invalidate the Credit transfer to the non-paying person(s) and redistribute such Credits as provided in this Policy, (ii) extend additional time for payment on such terms as the Board may determine, or (iii) take other actions in the best interests of the Nutrient Exchange and the Participants. In any such event, the Board may further in its discretion either delay payments otherwise provided for in this Section 5.8, or make partial payments, pro rata as provided herein, pending resolution of such matters.

5.9 Initial Upgrades. The Nutrient Exchange and the Participants acknowledge that for the initial Permitted Facility wastewater treatment upgrades necessary to implement the Exchange Compliance Plan for any river basin beginning January 1, 2011 (or such later initial year for compliance as DEQ may approve), the availability of engineering design services, the availability of construction services, availability of Water Quality Improvement Fund grant funds, extreme weather and other factors may make a Participant's provision and transfer to the Nutrient Exchange of Class A Credits impracticable and beyond the reasonable control of such Participant. In any case in which such transfer to the Nutrient Exchange of Class A Credits is determined by the Board in its discretion to be impracticable and beyond the reasonable control of such Participant, such not-at-fault Participant shall be relieved of its obligations for the transfer to the Nutrient Exchange of Class A Credits, but only the extent that such Credits are actually not available to such Participant and only for the period of time of the initial unavailability. Any resulting Credit shortfalls impacting the ability to supply Credits to Class A Buyers shall be managed in accordance with Section 5.12 (Credit Shortfall Management Procedures). In addition, the Nutrient Exchange shall request DEQ's concurrence that neither the not-at-fault Class A Seller(s) as defined in this Section 5.9 nor the not-at-fault waiting Buyer(s) will be deemed to be in noncompliance or subject to enforcement solely because of such circumstances and related Credit supply impacts.

5.10 Waiver of Class A Credit Sales Obligation. If during the Reconciliation Year sufficient Credits exist to meet the demands of all Participants for the Compliance Year, a Class A Seller's Class A Credit sales obligation shall be waived to the extent of its Class A Credit shortfall.

5.11 Option to Purchase Additional Credits During Reconciliation. If during the Reconciliation Year sufficient Credits exist to meet the demands of all Participants for the Compliance Year, after waivers of Class A Credit sale obligations pursuant to Section 5.10 any Participant desiring to purchase additional Credits for unanticipated needs (*i.e.*, Credits required beyond the Participant's Class A Credit purchases scheduled in the Exchange Compliance Plan) may purchase such Credits from the Nutrient Exchange at the premium price applicable to Participants as specified in Paragraph 5.7(b)(ii) to meet its Watershed General Permit compliance obligations.

5.12 Credit Shortfall Management Procedures.

(a) If insufficient Credits exist to meet the demands of all Participants, Class A Buyers shall have priority access to available Credits to the extent provided in this Paragraph 5.12(a). To the extent of the available Credits, Credits shall first be transferred to Class A Buyers in a quantity sufficient to satisfy either the amount of Credits scheduled as a Class A Credit purchase in the Exchange Compliance Plan for each Class A Buyer or the amount of Credits actually needed by the Class A Buyer to comply with its Delivered WLA, whichever is less for each Class A Buyer (its "Class A Shortfall Distribution Quantity"). Such distribution to Class A Buyers and any subsequent distribution to Participants shall be implemented in accordance with either Paragraph 5.12(b) or Paragraph 5.12(c), as appropriate.

(b) If the distribution of available Credits pursuant to Subparagraph 5.12(a) is insufficient to satisfy all Class A Buyers in the manner and to the extent provided in Subparagraph 5.12(a), the following procedure shall apply: (i) all available Credits will be distributed among the Class A Buyers pro rata in proportion to the Class A Shortfall Distribution Quantity of each, and (ii) all Class A Sellers that failed to generate and transfer all of the Class A Credits that such Sellers had agreed to provide pursuant to Section 4.5 of this Policy and scheduled in the Plan shall make up their allocable share of any remaining shortfall of Class A Credits to the extent required to meet the total Class A Shortfall Distribution Quantity of all Class A Buyers, pro rata in proportion to each such Class A Seller's Class A Credit sales shortfall, by acquiring Credits from outside of the Nutrient Exchange, from the Water Quality Improvement Fund administered by DEQ, or as otherwise allowed under applicable law.

(c) If the distribution of available Credits pursuant to Subparagraph 5.12(a) is sufficient to satisfy all Class A Buyers in the manner and to the extent provided in Subparagraph 5.12(a), any remaining Credits shall be transferred in equal shares to all Participants who desire such Credits; provided, however, that no Participant may purchase more Credits than required for compliance of its Permitted Facility under the Watershed General Permit. Each Participant with a remaining need for Credits thereafter shall be solely responsible for acquiring sufficient

additional Credits from outside of the Nutrient Exchange, from the Water Quality Improvement Fund administered by DEQ, or as otherwise allowed under applicable law.

(d) In the discretion of the Board, the Nutrient Exchange may assist the Participants in acquiring sufficient additional Credits from outside of the Nutrient Exchange, from the Water Quality Improvement Fund administered by DEQ, or as otherwise allowed under applicable law; however, the Nutrient Exchange shall have no liability whatsoever for or related to a Credit shortfall regardless of the cause thereof.

## **ARTICLE VI MISCELLANEOUS PROVISIONS**

6.1 Amendments. This Policy may be amended from time to time in accordance with Article VII of the Bylaws.

6.2 Administrative Obligations. As a condition of continuing participation and without limiting any other provision of this Policy, each Participant shall (a) execute and comply with terms of the Nutrient Credit Services Agreement; (b) pay any applicable fees in a timely manner, and (c) pay its Credit purchase costs as provided herein in a timely manner.

6.3 Compliance with Watershed General Permit; Exchange Not Liable. Each Participant shall remain responsible for ensuring its own compliance with the Watershed General Permit. Neither the Nutrient Exchange, nor its officers, governors (directors), technical consultants or other advisors shall be responsible for assuring an adequate supply of Credits or for any other costs or damages of any kind related in any way to the operation of the Nutrient Exchange, including consequential damages.

6.4 No Waiver. No failure to exercise, and no delay in exercising, any right, power or privilege under this Policy by the Nutrient Exchange shall operate as a waiver, nor shall any single or partial exercise of any right, power or privilege hereunder preclude the exercise of any other right, power or privilege. No waiver by the Nutrient Exchange of any breach of any provision shall be deemed to be a waiver of any preceding or succeeding breach of the same or any other provision, nor shall any waiver be implied from any course of dealing.

## **ATTACHMENTS**

- A Annual Schedule for Plan Update and Reconciliation Processes
- B Credit Price Schedule
- C Facility Data Checklist
- D Compliance Deadline Statement
- E Seller's Credit Exchange Confirmation Form
- F Buyer's Credit Exchange Confirmation Form



**ATTACHMENT A**

**ANNUAL SCHEDULE**

<b><u>Action</u></b>	<b><u>Deadline</u></b>	<b><u>Party Responsible</u></b>	<b><u>Policy Section(s)</u></b>
Submit Class A Credit Sale/Purchase Obligation Change Requests (OPTIONAL) (only for changes proposed to current Planning Period, not for new Year 5)	Sept. 1	Participant	4.8
Submit Facility Data Checklist (Attachment C) for Plan Update Development	Sept. 1	Participant	4.3
Submit Annual Report to Nutrient Exchange (and DEQ per 9 VAC 25-820-70 Part I F)	Feb. 1	Participant	5.2
Submit Exchange Compliance Plan Update to DEQ	Feb. 1	Exchange	4.1, 4.10
Prepare Initial Reconciliation Report	Mar. 7	Exchange	5.3
Distribute Credit Exchange Confirmation Forms to Sellers	Mar. 15	Exchange	5.4(a)
Distribute Invoices to Buyers	Mar. 15	Exchange	5.4(b)
Submit Credit Exchange Confirmation Forms to Nutrient Exchange	April 15	Sellers	5.4(a)
Invoice Payments Due from Buyers	May 1	Buyers	5.4(b), 5.7
Distribute Signed Credit Exchange Confirmation Forms to Buyers	May 20	Exchange	5.5(b)
Certify Credit Purchases to DEQ (9 VAC 25-820-70 Part J 2 f)	June 1	Buyers	N/A
Prepare Final Reconciliation Report	June 15	Exchange	5.4
Disbursement of Funds to Participants for Credit Sales	Aug. 1	Exchange	5.8

**ATTACHMENT B**

**CREDIT PRICE SCHEDULE**

<b>Compliance Year</b>	<b>Reconciliation Year</b>	<b>Class A Credit Purchase Price (\$/Credit)</b>		<b>Price Status (Firm or Estimate)</b>
		<i><b>Nitrogen</b></i>	<i><b>Phosphorus</b></i>	
2011	2012	\$2.00	\$4.00	Firm
2012	2013	\$2.00	\$4.00	Firm
2013	2014	\$2.15	\$4.30	Firm
2014	2015	\$2.65	\$4.60	Firm
2015	2016	\$3.05	\$4.93	Firm
2016	2017	\$3.50	\$5.27	Firm
2017	2018	\$3.75	\$5.65	Firm
2018	2019	\$3.78	\$5.70	Firm
2019	2020	\$3.82	\$5.76	Firm
2020	2021	\$3.86	\$5.81	Firm
2021	2022	\$3.87	\$5.82	Firm
2022	2023	\$3.94	\$5.93	Firm
2023	2024	\$4.04	\$6.08	Firm

Revision: July 2018

## ATTACHMENT C

### FACILITY DATA CHECKLIST FOR 2019 UPDATE

**Participant (Owner) Name:** \_\_\_\_\_

**Facility Name:** \_\_\_\_\_

Designated Representative (or Alternate) Name: \_\_\_\_\_

Contact Phone: \_\_\_\_\_

Contact Email: \_\_\_\_\_

*(please enter information only in cells with blue text)*

<b>NITROGEN Data Checklist</b>	New 5th Year	Estimates Beyond 5-year Planning Period		
	2023	2024	2025	2026
Projected Flow (mgd)	0.00	0.00	0.00	0.00
Projected mg/L (avg. annual)	0.00	0.00	0.00	0.00
<b>End-of-Pipe Pounds</b>	0	0	0	0
<b>Delivery Factor<sup>1</sup></b>	0.00	0.00	0.00	0.00
Delivered Pounds	0	0	0	0
<b>Delivered WLA<sup>1</sup></b>	0	0	0	0
<b>Expected Credits</b>	0	0	0	0
Adjustments In (Out) <sup>2</sup>	0	0	0	0
<b>Net Expected Credits</b>	0	0	0	0
<b>Class A Sales (Purchases)<sup>3</sup></b>	0	0	0	0
Expected Class B Credits	0	0	0	0
Class A Purchase Price (\$/lb)	\$ 4.04			
<b>Facility Class A Purchase Cost<sup>5</sup></b>	\$ -			

<b>PHOSPHORUS Data Checklist</b>	New 5th Year	Estimates Beyond 5-year Planning Period		
	2023	2024	2025	2026
Projected Flow (mgd) <sup>4</sup>	0.00	0.00	0.00	0.00
Projected mg/L (avg. annual)	0.00	0.00	0.00	0.00
<b>End-of-Pipe Pounds</b>	0	0	0	0
<b>Delivery Factor<sup>1</sup></b>	0.00	0.00	0.00	0.00
Delivered Pounds	0	0	0	0
<b>Delivered WLA<sup>1</sup></b>	0	0	0	0
<b>Expected Credits</b>	0	0	0	0
Adjustments In (Out)	0	0	0	0
<b>Net Expected Credits</b>	0	0	0	0
<b>Class A Sales (Purchases)</b>	0	0	0	0
Expected Class B Credits	0	0	0	0
Class A Purchase Price (\$/lb)	\$ 6.08			
<b>Facility Class A Purchase Cost<sup>5</sup></b>	\$ -			

**1 - Remember to use updated information! Facility-specific Delivery Factors and Delivered WLAs as shown on DEQ's Registration List for 2021 and beyond.**

**2 - Adjustments include Private Exchanges, Bubble Exchanges, or WQIF-held Credits; enter a positive number for receipt of Credits, enter a negative number for Credits given to other facilities (or WQIF-held credits)**

**3 - If showing positive value for Net Expected Credits, enter the number of Class A Credits committed for sale (enter 0 if no Class A Credits are committed for sale).**

**3 - If showing negative value for Net Expected Credits, enter the same value in this row to indicate Class A Credit purchase commitment (consistent with Credit Exchange Policy)**

**4 - Projected flows for the Phosphorus Credit forecast are set equal to those used to generate the Nitrogen Credit forecast**

**5 - Represents the total purchase cost to the facility (regardless of actual Credit need) based on the Credit purchase forecast and corresponding Class A purchase price**

## ATTACHMENT D

### COMPLIANCE STATEMENT FOR FACILITIES SUBJECT TO REDUCED WASTELOAD ALLOCATIONS IN CHESAPEAKE BAY TMDL

**Facility (Or Owner Bubble) Name:** \_\_\_\_\_

**Basin/Nutrient(s):** \_\_\_\_\_

**Compliance Information Required by 9 VAC 25-820-40 A 2 (Check Option 1 or Option 2)**

\_\_\_\_\_ Option 1 (9 VAC 25-820-40 A 2 b): Permittee hereby requests WLA to be effective as of January 1, 2017.

\_\_\_\_\_ Option 2 (9 VAC 25-820-40 A 2 a): Additional capital project(s) is needed to ensure continued compliance with the WLA through the applicable compliance schedule deadline for the tributary. (Note: Checking Option 2 does not preclude use of credit purchase as means of compliance below.)

If Option 2 is checked, briefly describe need for additional projects:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### **Implementation Schedule**

1. Does permittee anticipate using credit purchase to comply?

\_\_\_\_\_ NO                      \_\_\_\_\_ YES

2. Is permittee implementing a capital project to comply?

\_\_\_\_\_ NO                      \_\_\_\_\_ YES

(If YES, compliance is required as soon as possible but no later than the applicable tributary compliance schedule deadline.)

3. Capital Project Milestone Schedule (Specify estimated date for each milestone. For bubbles, specify facility name(s) and list multiple facility schedules if applicable.)

Engineer selection	_____
PER/CER to DEQ	_____
Plans & Specifications to DEQ	_____
Commence construction	_____
Complete construction	_____
CTO Request to DEQ (POTWs only)	_____

**ATTACHMENT E**

**SELLER'S CREDIT EXCHANGE CONFIRMATION FORM  
COMPLIANCE YEAR 20\_\_**

The execution of this Credit Exchange Confirmation Form confirms a Credit Transfer from the Participant to the Nutrient Exchange pursuant to the Section 5.4(a) of the Credit Exchange Policy of the Nutrient Exchange. Capitalized terms have the meanings provided in the Credit Exchange Policy.

In accordance with the provisions of and subject to the terms and limitations of the Credit Exchange Policy and the Nutrient Credit Services Agreement, the undersigned Participant hereby:

1. Acknowledges receipt of the Initial Reconciliation Report dated \_\_\_\_\_.
2. Confirms and represents that the Initial Reconciliation Report correctly states for its Permitted Facility(ies) in the Exchange Compliance Plan the amounts of Class A Credits of TN and TP and Class B Credits of TN and TP transferred to the Nutrient Exchange.
3. Acknowledges and confirms the transfer of such Credits in such amounts to the Nutrient Exchange.

*To be completed by Participant:*

Participant Name (Organization): \_\_\_\_\_

Designated Representative (Print): \_\_\_\_\_

Designated Representative Signature: \_\_\_\_\_

Date: \_\_\_\_\_

*No later than April 15 submit the signed original form to:*

**Virginia Nutrient Credit Exchange Association, Inc.**

**ATTN: Secretary**

**P.O. Box 51**

**Richmond, VA 23218-0051**

## **ATTACHMENT F**

### **BUYER'S CREDIT EXCHANGE CONFIRMATION FORM**

The execution of this Credit Exchange Confirmation Form confirms a Credit Transfer to the Participant from the Nutrient Exchange pursuant to the Section 5.4(b) of the Credit Exchange Policy of the Nutrient Exchange. Capitalized terms have the meanings provided in the Credit Exchange Policy.

In accordance with the provisions of and subject to the terms and limitations of the Credit Exchange Policy and the Nutrient Credit Services Agreement, the Nutrient Exchange hereby transfers to the Participant identified herein the following amounts of Credits of TN and TP:

Participant Name (Organization): \_\_\_\_\_

River Basin (One Per Form): \_\_\_\_\_

Compliance Year: \_\_\_\_\_

TN Credits (Pounds): \_\_\_\_\_

TP Credits (Pounds): \_\_\_\_\_

### **VIRGINIA NUTRIENT CREDIT EXCHANGE ASSOCIATION, INC.**

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

*For convenience, the next page of this form made be used, subject to DEQ's approval, by the Participant to make its required certification of credit acquisition to DEQ.*

**BUYER'S CREDIT EXCHANGE NOTIFICATION TO DEQ  
PURSUANT TO PART I J 2 f OF THE GENERAL PERMIT  
FOR TOTAL NITROGEN AND TOTAL PHOSPHORUS DISCHARGES AND  
NUTRIENT TRADING IN THE CHESAPEAKE BAY WATERSHED IN VIRGINIA  
9 VAC 25-820-70**

General Permit Registration No.: \_\_\_\_\_

Permittee Name: \_\_\_\_\_

Pursuant to Part I J 2 f of the Watershed General Permit, the above-named Permittee, a Participant in the Virginia Nutrient Credit Exchange Association, Inc., hereby certifies that it has acquired sufficient Credits to satisfy its compliance obligations. The Credit Exchange Confirmation Form on the reverse side of this notification form documents the quantity of Credits of TN and TP transferred from the Nutrient Exchange to the Participant for the Compliance Year.

I certify under penalty of law that this notification and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Principal Executive Officer  
or Authorized Agent: \_\_\_\_\_

Typed or Printed Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Area Code/Phone Number: \_\_\_\_\_

Date: \_\_\_\_\_

**APPENDIX A**

**DEQ Approval Letters**







# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

Fax (804) 698-4500 TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

David K. Paylor  
Director

(804) 698-4000  
1-800-592-5482

L. Preston Bryant, Jr.  
Secretary of Natural Resources

September 7, 2007

Mr. Mark Haley  
President, Board of Governors  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

RE: Exchange Compliance Plan, July 31, 2007

Dear Mr. <sup>man</sup>Haley:

We have reviewed the Exchange's July 31, 2007 Compliance Plan and your letter of July 30, 2007 and are very pleased by the progress being made by the Exchange members. Especially encouraging are the projections that expected TN and TP loads will be below the aggregate wasteload allocations in all five basins by 2011.

After a careful review of all of the individual compliance plans and the Exchange's compliance plan, DEQ staff recommends that the existing 2011 compliance deadline be retained at this time for both parameters in all five basins. The Class A/Class B trading system adopted by the Exchange has served as an excellent tool for managing trades among its members. However, using only Class A pledges as the basis for determining a river basin compliance date appears inconsistent with the permit condition of achieving compliance "as soon as possible". In establishing "as soon as possible" compliance dates, DEQ must rely on the completion of projects that allow limits to be met and not delay the regulatory deadline due to a reluctance to sign Class A pledges.


We share your concern with the completion of so many projects on such a tight timeline. However, at this early date it is not possible to determine how quickly individual construction projects will proceed and what the actual capabilities of the upgraded facilities will be. For instance, after a year of progress, the performance of Exchange members was significantly better than what was projected for these facilities in the April 2006 draft report. Future annual compliance plan updates and DEQ's semi-annual WQIF progress reports will add further clarity to these projections and will be used along with the scheduling factors in the Virginia Code and the "as soon as possible" criteria to evaluate the need for basin schedule extensions. Accordingly, we believe that The Exchange's proposed footnote for the watershed general permit compliance table is neither necessary nor does it provide the public or EPA with an

opportunity to participate in regulatory changes to the permit schedules. Should it prove necessary, DEQ will initiate amendment to the permit under the Administrative Process Act to make appropriate revisions to the schedule.

We also share your desire for DEQ to provide a safe regulatory environment for participating owners to commit to buy or sell credits. The very existence of the trading program represents a significant reduction in risk for the permittees. This risk is further reduced by the ability to purchase compliance credits from the WQIF. DEQ has proposed to incorporate into the WQIF cost-control guidelines a provision that credits generated via WQIF-funded upgrades would be made available to other permittees by the facility generating the credits. As suggested in your July 30<sup>th</sup> letter, we are also pursuing a means of sustaining a pool of WQIF-funded BMP projects that will serve as a source of WQIF credits in each basin.

We greatly appreciate the Exchange's efforts in encouraging and facilitating the cooperation of over 100 facilities to reduce nutrient loads to the Chesapeake Bay, and look forward to our continued working relationship with your organization.

Sincerely,

A handwritten signature in cursive script, appearing to read "Ellen Gilinsky".

Ellen Gilinsky, Ph.D., Director  
Division of Water Quality



## COMMONWEALTH of VIRGINIA

### DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

Fax (804) 698-4500 TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

L. Preston Bryant, Jr.  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4000  
1-800-592-5482

April 25, 2008

Mr. Mark A. Haley, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2008 Annual Update

Dear Mr. Haley: *Mark*

We have reviewed the Exchange's February 1, 2008 Compliance Plan Update and DEQ gives its approval for implementation of the plan under the watershed general permit. We are very pleased by the progress being made by the organization and its members. The growth in membership has been impressive and we expect that participation will continue to grow as the January 1, 2011 deadline approaches and more facilities recognize the benefits of membership.

Equally impressive is the reduction in load made in some basins as more and more facilities optimize their operations. The Exchange members managed to operate below their combined TN wasteload allocations in the Potomac and Rappahannock Basins and below their combined TP wasteload allocations in the York and (Lower) James Basins; however we must recognize 2007 was a dry year.

We will continue to monitor and evaluate progress in each basin as noted in my September 7, 2007 letter and Section 7.1 of the annual update. Between the annual compliance plan updates, the WQIF annual reports and the annual load reports we are confident that we will stay on top of this issue and be able to make any schedule adjustments necessary. Also as noted in my September 7, 2007 letter, the conditions in Section 7.2 on the compliance plan do not dictate the terms of DEQ's enforcement policy. However, please rest assured that DEQ too has much invested in the watershed general permit and intends to work cooperatively with all stakeholders to ensure a fair and successful program.

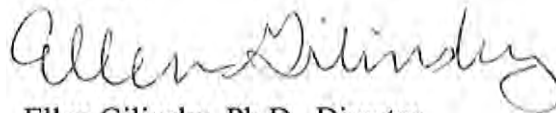
With respect to the Eastern Shore Basin, we share your concern that the basin is not large enough to provide ample trading partners. As you know a legislative change would be required to open up the Eastern Shore market to include purchases from the Potomac and Rappahannock Basins.

Mr. Mark A. Haley  
April 25, 2007  
Page 2 of 2

We have noted in recent weeks that as WQIF agreements and VPDES permits are negotiated, a few facilities have backed off of the upgrade plans provided to the Exchange. So far none of these changes appear to affect the basin compliance goals. We intend to track these discrepancies to ensure that they do not have an adverse impact on basin compliance as a whole and will continue to instruct such facilities to keep the Exchange informed of any changes in their plans.

In closing, we continue to be encouraged by the progress in the trading program and by the cooperation and efforts of the Exchange and its members in particular. We look forward to another year of this partnership and progress towards a restored Chesapeake Bay.

Sincerely,

A handwritten signature in cursive script, reading "Ellen Gilinsky".

Ellen Gilinsky, Ph.D., Director  
Division of Water Quality

Cc: Mr. Chris Pomeroy, Esq. - AquaLaw





# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

Fax (804) 698-4500 TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

L. Preston Bryant, Jr.  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4000  
1-800-592-5482

September 24, 2009

Mr. Mark A. Haley, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2009 Annual Update

Dear Mr. Haley:

We have reviewed the Exchange's February 1, 2009 Compliance Plan Update and DEQ gives its approval for implementation of the plan under the watershed general permit. We remain very pleased by the progress being made by the organization and its members. Point source Total Nitrogen and Total Phosphorus delivered loads decreased in each of the five permitted watersheds in 2008.

We share your concern with the lack of trading partners on the Eastern Shore and look forward to working with the Exchange in the next year to address this issue. Finally, our staff has had some discussions with you concerning a few survey responses that appear to be out of date by the time they are compiled and submitted. A few such situations may be inevitable as many facilities have struggled with upgrade decisions in the middle of the economic downturn. We are currently reviewing WQIF records to provide you with a list of apparent discrepancies for use in reviewing the next round of survey responses.

We look forward to another year of partnering with the Exchange and its members in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in cursive script, reading "Frederick K. Cunningham".

Frederick K. Cunningham  
Water Permit Manager

Office of Water Permits and Compliance Assistance

Cc: Mr. Chris Pomeroy, Esq. - AquaLaw



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

November 2, 2010

Mr. Mark A. Haley, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2010 Annual Update

Dear Mr. Haley:

We have reviewed the Exchange's February 1, 2010 Compliance Plan Update and DEQ gives its approval for implementation of the plan under the watershed general permit. With numerous upgrades now close to completion, we look forward to compliance with the Total Nitrogen and Total Phosphorus wasteload allocations in 2011. DEQ will be distributing final Discharge Monitoring Reports to all registered facilities early next year. The Exchange and its members are to be congratulated for all the hard work that has made meeting this aggressive deadline possible.

We look forward to another year of partnering with the Exchange and its members in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in cursive script, reading "Frederick K. Cunningham".

Frederick K. Cunningham  
Water Permit Manager

Office of Water Permits and Compliance Assistance

cc: Mr. Chris Pomeroy, Esq. - AquaLaw



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

January 26, 2012

Mr. Mark A. Haley, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2011 Annual Update

Dear Mr. Haley:

We have reviewed the Exchange's February 1, 2011 Compliance Plan Update. The Plan is approved with the condition that the items included on the attached summary be addressed as appropriate in either the 2012 Compliance Plan Update due on February 2, 2012 or the Reconciliation for Compliance Year 2011 report due by June 1, 2012.

A preliminary review of the 2011 DMR data indicates that there are excess credits in all basins except the Eastern Shore and that the Eastern Shore shortfall can be covered by surplus credits in the Potomac and Rappahannock basins. The Exchange and its members are to be congratulated for all the hard work that has made meeting the January 1, 2011 compliance deadline possible.

We look forward to another year of partnering with the Exchange and its members in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in dark ink, appearing to read "Frederick K. Cunningham".

Frederick K. Cunningham  
Water Permit Manager  
Office of Water Permits and Compliance Assistance

cc: Mr. Chris Pomeroy, Esq. – AquaLaw



**EXCHANGE COMPLIANCE PLAN 2011 ANNUAL UPDATE:  
ITEMS TO BE ADDRESSED PER DEQ CONDITIONAL APPROVAL**

**1. Town of Onancock WWTP**

For 2011, the Plan indicates that the Town of Onancock WWTP is using its 0.75 MGD WLAs; however, a CTO has not yet been issued for this design flow. Accordingly, the Plan should apply the 0.25 MGD allocation for 2011. This item should be addressed during Reconciliation for Compliance Year 2011. For later years, the 0.75 MGD WLAs may be applied beginning with the first full Compliance Year following issuance of the CTO.

**2. Hanover County Bubble**

The Plan indicates that a portion of the Totopotomoy WWTP's 10 MGD WLAs is used for trading outside the Hanover County bubble. DEQ expects any credits generated at other County facilities within the bubble (i.e. Doswell) to be used within the bubble before credits associated with Totopotomoy's pending 3 MGD expansion from 7 MGD to 10 MGD are used (i.e., until the CTO for 10 MGD issued). This equates to 54,820 lbs/yr of TN and 6,396 lbs/yr of TP. This means that the first 54,820 lbs/yr of TN credits and 6,396 lbs/yr of TP credits that are not used within the Hanover bubble are treated as "WQIF-held." Based on the actual 2011 loads, the Reconciliation for Compliance Year 2011 should include:

	Total Aggregate Delivered WLA	2011 Actual Delivered Load	Gross 2011 Credits	Credits Associated with 3 MGD	WQIF Held Credits	Net Hanover Credits
Total N	210,692	67,251	143,441	54,820	54,820	88,621
Total P	25,156	5,508	19,648	6,396	6,396	13,252

**3. Alleghany County**

The Lower Jackson WWTP is shown as having a delivered TN WLA of 19,187 lbs/yr when the actual allocation is 8,223 lbs/yr. Likewise the TP delivered WLA is shown as 5,330 lbs/yr rather than 2,284 lbs/yr. Presumably the difference reflects the transfer of the entire Clifton Forge WLA to Lower Jackson WWTP. However the transfer of the Clifton Forge WLA will not occur until completion of the public notice period in February 2012. Therefore, it would be more appropriate to address this item as a Private Exchange in the Reconciliation for Compliance Year 2011.

Additionally, while the WLAs for Lower Jackson WWTP and Clifton Forge WWTP are based on a total capacity of 3.5 MGD, at this time only 2.6 MGD has been constructed. This equates to WQIF held credits of 4,934 delivered lbs/yr TN and 1,371 delivered lbs/yr TP. The WQIF held credits are properly indicated on the TN ledger however they are not included on the TP ledger. WQIF held credits should be accounted for in the Reconciliation for Compliance Year 2011 in a similar manner as with the Hanover County Bubble discussed above.



4. **Town of Culpeper WWTP**

The Plan should be updated to reflect consolidation of the Culpeper County Mountain Run 1.5 MGD WLAs with the WLAs of the expanded 6.0 MGD Town of Culpeper WWTP.

5. **Spotsylvania County Bubble**

While the bubble WLAs are correct, individual WLAs should be updated to reflect the transfer of 1.4 MGD of WLAs from FMC WWTP to Massaponax WWTP.



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

January 22, 2013

Mr. Frank W. Harksen, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2012 Annual Update

Dear Mr. Harksen:

We have reviewed the Exchange's February 1, 2012 Compliance Plan Update and DEQ gives its approval for implementation of the plan under the watershed general permit. Again in 2012, we expect there to be excess credits available in all basins except the Eastern Shore and that the Eastern Shore shortfall can be covered by surplus credits in the Potomac and Rappahannock basins. The Exchange and its members are to be congratulated for all the hard work that has made meeting and maintaining the Chesapeake Bay TMDL point source nutrient load caps possible.

We look forward to another year of partnering with the Exchange and its members in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in black ink that reads "Frederick K. Cunningham".

Frederick K. Cunningham  
Water Permit Manager  
Office of VPDES Permits

cc: Mr. Chris Pomeroy, Esq. – AquaLaw



## COMMONWEALTH of VIRGINIA

### DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

December 18, 2013

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

Mr. Frank W. Harksen, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2013 Annual Update

Dear Mr. Harksen:

We have reviewed the Exchange's February 1, 2013 Compliance Plan Update and the document is approved for implementation under the watershed general permit. We note that members of The Exchange continue to follow and participate in DEQ's reevaluation of the James River Chlorophyll-a criteria. Upon completion of the study DEQ will be establishing final individual wasteload allocations (WLAs) for the significant James River dischargers. As part of that process we will be performing an engineering costs analysis to help establish cost effective and equitable WLAs. We look forward to collaborating with the James River dischargers on the analysis as the final nutrient reduction goals for the James River Basin are developed.

The Exchange and its members are to be congratulated for all the hard work that has made meeting and maintaining the Chesapeake Bay TMDL point source nutrient load caps possible. We look forward to another year of partnering with the Exchange and its members in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in cursive script, reading "Frederick K. Cunningham".

Frederick K. Cunningham, Manager  
Office of Water Permitting

cc: Mr. Chris Pomeroy, Esq. – AquaLaw





# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

December 17, 2014


Mr. Frank W. Harsen, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2014 Annual Update

Dear Mr. Harsen:

We have reviewed the Exchange's January 30, 2014 Compliance Plan Update and the document is approved for implementation under the watershed general permit. The Exchange and its members are to be congratulated for all the hard work that has made meeting and maintaining the Chesapeake Bay TMDL point source nutrient load caps possible. Please note that we will be publishing a Notice of Intended Regulatory Action for the reissuance of the Watershed General Permit in the coming month and will be soliciting participants in that process. We look forward to another year of partnering with the Exchange and its members in pursuit of a restored Chesapeake Bay.

Sincerely,

  
Frederick K. Cunningham, Manager  
Office of Water Permitting

cc: Mr. Chris Pomeroy, Esq. – AquaLaw



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4000  
1-800-592-5482

January 26, 2016

Mr. Frank W. Harksen, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2015 Annual Update

Dear Mr. Harksen:

We have reviewed the Exchange's February 1, 2015 Compliance Plan Update and the document is approved for implementation under the watershed general permit. The Exchange and its members are to be congratulated for all the hard work that has made meeting and maintaining the Chesapeake Bay TMDL point source nutrient load caps possible.

We look forward to another year of partnering with the Exchange and its members in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in black ink, appearing to read "Allan Brockenbrough, II".

Allan Brockenbrough, II, Manager  
Office of Water Permitting

cc: Mr. Chris Pomeroy, Esq. – AquaLaw



## COMMONWEALTH of VIRGINIA

### DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4000  
1-800-592-5482

January 6, 2017

Mr. Frank W. Harksen, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

Re: Exchange Compliance Plan 2016 Annual Update

Dear Mr. Harksen:

We have reviewed the Exchange's 2016 Compliance Plan Update and the document is approved for implementation under the watershed general permit. The Exchange and its members are to be congratulated for all the hard work that has made meeting and maintaining the Chesapeake Bay TMDL point source nutrient load caps possible.

We look forward to another year of partnering with the Exchange and its members in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in black ink, reading "Allan Brockenbrough, II".

Allan Brockenbrough, II, Manager  
Office of Water Permitting

cc: Mr. Chris Pomeroy, Esq. – AquaLaw



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Molly Joseph Ward  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4020  
1-800-592-5482

June 8, 2017

Mr. Frank W. Harksen, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

RE: Exchange Compliance Plan 2017 Annual Update

Dear Mr. Harksen:

We have reviewed the Virginia Nutrient Credit Exchange Association's *Exchange Compliance Plan 2017 Annual Update* and the document is approved for implementation under the Watershed General Permit.

The Exchange and its membership are to be congratulated for the continued dedication to meeting and maintaining the Chesapeake Bay TMDL point source nutrient load caps. We look forward to another year of partnering with the Exchange and its membership in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in blue ink, reading "Allan Brockenbrough, II".

Allan Brockenbrough, II, P.E.  
Manager- Office of VPDES Permits

CC: Mr. Chris Pomeroy, Esq. - AquaLaw





*Commonwealth of Virginia*

*VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY*

1111 E. Main Street, Suite 1400, Richmond, Virginia 23219

P.O. Box 1105, Richmond, Virginia 23218

(800) 592-5482

[www.deq.virginia.gov](http://www.deq.virginia.gov)

Matthew J. Strickler  
Secretary of Natural Resources

David K. Paylor  
Director  
(804) 698-4000

December 13, 2018

Mr. Frank W. Harksen, President  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

RE: Exchange Compliance Plan 2018 Annual Update

Dear Mr. Harksen:

We have reviewed the Virginia Nutrient Credit Exchange Association's *Exchange Compliance Plan 2018 Annual Update* and the document is approved for implementation under the Watershed General Permit.

We look forward to another year of partnering with the Exchange and its membership in pursuit of a restored Chesapeake Bay.

Sincerely,

A handwritten signature in cursive script, appearing to read "Allan Brockenbrough, II".

Allan Brockenbrough, II, P.E.  
Manager- Office of VPDES Permits

CC: Mr. Chris Pomeroy, Esq. - AquaLaw



APPENDIX B

# Form of Nutrient Credit Services Agreement



## **NUTRIENT CREDIT SERVICES AGREEMENT**

**THIS NUTRIENT CREDIT SERVICES AGREEMENT** (this “Agreement”) made by and between the Virginia Nutrient Credit Exchange Association, Inc., (the “Nutrient Exchange”) and the undersigned owner or operator of a Permitted Facility included in the Exchange Compliance Plan (the “Participant”).

### **BACKGROUND**

A. The Participant owns or operates a certain facility or facilities regulated under the General Virginia Pollutant Discharge Elimination System Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia, 9 VAC 25-820, issued by the State Water Control Board and Department of Environmental Quality (collectively “DEQ”) for a five-year permit term beginning January 1, 2007 or as hereafter modified or reissued from time to time (the “Watershed General Permit”).

B. The Nutrient Exchange is a Virginia non-stock corporation comprised of permittees subject to the Watershed General Permit and is authorized by section 62.1-44.19:17 of the Code of Virginia to assist permittees with Watershed General Permit compliance and to facilitate voluntary nutrient credit trading.

C. Among other requirements, the Watershed General Permit (9 VAC 25-820-70, Part I B) imposes limitations on the discharge of two nutrients, total nitrogen and total phosphorus, from the Participant’s Permitted Facility(ies), and requires the Participant to submit to DEQ by August 1, 2007 and each February 1 thereafter, either individually or through the Nutrient Exchange, a compliance plan (9 VAC 25-820-40 and -70 Part I D) identifying how its Permitted Facility(ies) will comply with such limitations.

D. On behalf of the Participants and based on the data provided and decisions made by the individual Participants, the Nutrient Exchange has developed, and intends to maintain by means of the Watershed General Permit-required annual Plan Updates, a compliance plan for each of Virginia’s five major river basins (collectively the “Exchange Compliance Plan”) to assist the Participants in complying with the Watershed General Permit compliance plan requirement.

E. In addition, Participants in the Exchange Compliance Plan have the option of exchanging nutrient Credits. The Exchange Compliance Plan identifies firm commitments for the purchase and sale of Class A Credits at the request of numerous individual Participants who have elected to participate as Class A Buyers or Class A Sellers, and further establishes a market for and provides all Participants with the option of later purchasing available Class B Credits on more flexible terms to assist in maintaining compliance during unanticipated circumstances.

F. The Nutrient Exchange serves as the central trading exchange to facilitate the execution and reporting of these voluntary nutrient Credit Exchanges by and among its Participants in accordance with its Credit Exchange Policy, the Watershed General Permit and,

when applicable, Water Quality Improvement Fund Grant Agreements entered into by and between a Participant and DEQ.

## **AGREEMENT**

NOW, THEREFORE, in consideration of the mutual covenants and conditions herein, the parties hereto agree as follows:

1. Annual Compliance Plan Updates. The Nutrient Exchange agrees to update the Exchange Compliance Plan annually and submit such Plan Update to DEQ for approval on or before the deadline (currently February 1 of each year) specified in Part I D of the Watershed General Permit. The Plan Update shall include updated information as provided by the Participant in accordance with the Credit Exchange Policy for its Permitted Facility(ies), including revisions to relevant facility-specific information. The Participant shall assist the Nutrient Exchange in the development of the Plan Update by providing information reasonably requested by the Nutrient Exchange in accordance with an annual Plan Update schedule to be established by the Nutrient Exchange.

2. Annual Reports. The Participant agrees to submit to the Nutrient Exchange a copy of the Participant's annual report to DEQ required by Part I F of the Watershed General Permit (9 VAC 25-820-70), and such other information as may be reasonably requested by the Nutrient Exchange to assist in the annual Reconciliation of Credit Exchanges for each Compliance Year.

3. Annual Credit Exchange Reconciliation. The Nutrient Exchange agrees to conduct an annual Reconciliation process for the timely execution of the Credit Exchanges elected by the Participants as specified in the Exchange Compliance Plan. The Participant agrees to implement any previously elected Class A Credit or Class B Credit Exchanges in accordance with the Credit Exchange Policy.

4. Incorporation of Credit Exchange Policy. The provisions of the Credit Exchange Policy are hereby incorporated as if such provisions were fully set out herein. For convenient reference, a copy of the current version of the Policy is attached hereto.

## **GENERAL PROVISIONS**

5. Definitions. Terms not specifically defined herein shall have the definitions provided in the Credit Exchange Policy.

6. Term. The Agreement shall be in effect once signed by both parties and shall have an initial term through and including June 30, 2013. This term is coincident with the five year Planning Period covered by the current Exchange Compliance Plan (January 1, 2008 through December 31, 2012) plus a six month period (January 1, 2013 through June 30, 2013) for the Reconciliation process for the fifth Compliance Year (2012). Such term shall automatically extend by one year, without notice, upon submittal to DEQ of each annual update of the Exchange Compliance Plan beginning with the 2009 Annual Update due February 1, 2009,

unless (a) the Participant withdraws as provided herein or (b) the Nutrient Exchange provides notice to the Participant prior to completion of the Plan Update that it will not extend the term of this Agreement.

7. Amendments to Credit Exchange Policy and Exchange Compliance Plan. The Nutrient Exchange and the Participant acknowledge that the Credit Exchange Policy and the Exchange Compliance Plan may be amended from time to time as a result of changes desired by the Participants, the Exchange Board of Governors or DEQ, possible changes to law, and other factors. It is agreed that changes thereto shall become effective upon notice to the Participants or upon a later effective date as may be specified in such notice.

8. Withdrawal. The Participant shall have the following rights to withdraw from the Nutrient Exchange and the Exchange Compliance Plan.

(a) Withdrawal Upon End of Current Term. This Agreement shall not automatically extend for an additional year upon the Plan Update as provided in Paragraph 6 if the Participant elects to withdraw by providing notice of such election to the Nutrient Exchange at least four years and nine months (57 months) prior to the expiration of the term of this Agreement or before any later date as the Nutrient Exchange may specify during the Plan Update process. In the event of such withdrawal, the Nutrient Exchange shall omit the Participant and its Permitted Facilities from the additional Compliance Year (the new Year 5) added to the Plan during the Plan Update process for that year. For example, if a Participant in the Exchange Compliance Plan for the five year Planning Period covering January 1, 2008 through December 31, 2012 desires to withdraw and not extend this Agreement for an additional year (*i.e.*, through December 31, 2013), the Participant shall provide its withdrawal notice on or before October 1, 2008.

(b) Withdrawal During Term in Response to Policy or Plan Amendment. Notwithstanding any other provision of this Agreement, if any change to the Credit Exchange Policy or the Exchange Compliance Plan pursuant to Paragraph 7 would result in a material adverse effect on the Participant within the five year Planning Period covered by the Exchange Compliance Plan then in effect, the Participant may withdraw from the Agreement by written notice delivered to the Nutrient Exchange within sixty (60) days of such Participant's notice of the change, unless the Nutrient Exchange in its discretion further amends the Credit Exchange Policy or Exchange Compliance Plan within ninety (90) days of receiving such notice in a manner that eliminates the material adverse effect. Such withdrawal shall be effective January 1 of the Compliance Year for which the material adverse effect would first otherwise occur. The Participant shall participate in the Reconciliation and execute all Credit Exchanges planned for each Compliance Year prior to the effective date of withdrawal and pay all Credit costs or receive Credit revenue through and including such Compliance Year. In addition, the Participant shall continue to pay all applicable fees or dues in the ordinary course through the effective date of such withdrawal.

(c) Withdrawal During Term for Other Reasons. In addition to the right to withdraw during the term of this Agreement as provided in Subparagraph 8(b), the Participant shall have the right to withdraw during the term of this Agreement through the Plan Update

process if the following conditions are satisfied: (i) the Board determines that the Participant's withdrawal, alone or in combination with other modification requests, would not have a material adverse effect during the Planning Period on the Nutrient Exchange or any non-withdrawing Participants, (ii) the Participant is and agrees to remain current on all fees and Credit purchase costs as are due or may come due through and including the time of completion of the Reconciliation process for the last Compliance Year for which its Permitted Facilities are covered by the Plan, and (iii) the Participant agrees to cooperate fully in the Reconciliation for the last Compliance Year for which its Permitted Facilities are covered by the Plan. Such withdrawal shall be effective subject to the foregoing conditions upon submittal of the Plan Update by the Nutrient Exchange to DEQ as provided in Paragraph 1 above.

9. Annual Fee. The Nutrient Exchange's obligations under this Agreement shall be contingent on the continued adequate funding of the Nutrient Exchange through fees applicable to and paid by the Participants. Following execution of this Agreement by both parties and by approximately November 2008, the Nutrient Exchange shall issue an invoice to the Participant in the amount shown on Attachment A under the column labeled "Nov. 2008." Such invoice shall also include the amount, if any, invoiced by the Nutrient Exchange to the Participant in approximately March 2008 (as shown under the column labeled "Mar. 2008") but not yet paid by the Participant. The Participant agrees to pay such invoice within forty-five (45) days of the invoice date. Beginning with the 2009 Plan Update, following submittal of each annual Plan Update to DEQ the Nutrient Exchange shall issue an invoice to the Participant for the annual fee. The Participant shall pay such invoice within forty-five (45) days of the invoice date or by July 31 of the calendar year in which the invoice is issued, whichever is later. The Nutrient Exchange agrees to periodically update such schedule to add the fee amount for future years and in so doing intends to keep the annual fees specified therein to the lowest level sufficient for proper operation in the discretion of the Board. The Board anticipates establishing annual fees associated with and payable after the 2009, 2010, 2011 and 2012 Plan Updates, respectively, at less than a maximum of twice the annual fee currently scheduled on Attachment A for Nov. 2008. If an annual fee associated with any Plan Update through and including the 2012 Plan Update were to exceed this maximum anticipated fee, in that event the Participant may withdraw in accordance with the same procedures provided in Paragraph 8(b) of this Agreement. For the 2009 Plan Update, the Board's current estimate is that the annual fee will be the same amount as the Nov. 2008 fee shown on Attachment A. Upon receipt of a written request from the Participant, the Nutrient Exchange agrees to provide the Participant with an accounting of its receipts and disbursements for the two fiscal years immediately preceding the fiscal year in which the written request is received. The Participant agrees to pay applicable fees when due. Failure to pay any annual fee invoice within forty-five (45) days shall result in an administrative charge of one hundred dollars (\$100). In the event the Participant fails to pay any annual fee invoice within ninety (90) days of the invoice date, without limiting any other remedies, the Board in its discretion may terminate this Agreement and eliminate the Participant's Permitted Facilities from the Plan. Such termination shall not relieve the Participant of its obligation to pay any amounts due prior to the date of termination.

10. Waiver of Liability of the Nutrient Exchange. In recognition of the benefits derived by Participants and the nature of the Nutrient Exchange, to the extent permitted by law the Participant waives any causes of action and rights of recovery for liability of the Nutrient

Exchange and its Board of Governors, officers, employees, consultants and other advisors, for any losses or damage to the Participant, other than due to the gross negligence or intentional misconduct thereof.

11. Authorization of Signature. The Participant and the Nutrient Exchange each represent and warrant that its execution of this Agreement by the undersigned is fully authorized and validly performed.

12. No Partnership. Nothing contained in this Agreement shall create any partnership, trust, or joint venture with regard to the Nutrient Exchange and any or all Participants.

13. Third Party Beneficiaries. This Agreement is solely for the benefit of the Nutrient Exchange and its Participants and their permitted successors and assignees and shall not confer any rights or benefits on any other person.

14. Notices. Notices pursuant to Paragraphs 6 and 8 shall be delivered at the following address by U.S. Mail, certified with return receipt, and shall be deemed given when received (or delivery is refused) by the party to whom such notice or communication is directed. A party may change its address for such notice in writing as provided herein.

If to the Nutrient Exchange: Virginia Nutrient Credit Exchange Association, Inc.  
ATTN: Secretary  
P.O. Box 51  
Richmond, Virginia 23218-0051

If to the Participant:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

with a copy to the Participant's Designated Representative.

Any other notices and communications pursuant to this Agreement shall be made by or to the Participant's Designated Representative, or alternate when appropriate, each as designated the Participant from time to time in accordance with the Bylaws of the Nutrient Exchange.

15. Netting of Payments. The Nutrient Exchange may, but shall not be obligated to, net any payments to the Participant for such Participant's sales of Credits or otherwise with any fees past due, other authorized charges past due, or charges for Credits purchased past due to the Nutrient Exchange.

16. Integration. This Agreement (including the Credit Exchange Policy incorporated herein by reference) contains the entire agreement between the Nutrient Exchange and the Participant as to the subject matter hereof and supercedes all previous written and oral negotiations, commitments, proposals and writings, including those of counsel. Except as

otherwise provided herein or in the Credit Exchange Policy, no amendments may be made except by a writing signed by the parties.

17. Change in Law. Other than as specifically provided in the Credit Exchange Policy, in the event of any material change in applicable laws or regulations the parties shall work together to amend the Agreement to conform to such change in law, while maintaining as closely as practical the provisions and intent of this Agreement.

18. Governing Law; Severability. This Agreement shall be construed in accordance with and governed for all purposes by the laws of the Commonwealth of Virginia. If any term or provision of this Agreement, the deletion of which would not adversely affect the receipt of a material benefit by either party hereunder, shall be held by a court of competent jurisdiction to be invalid or unenforceable, the remainder of this Agreement shall not be affected thereby and each other term and provision of this Agreement shall remain valid and enforceable to the fullest extent permitted by law. It is the intent of the parties to this Agreement, and the parties agree, that in lieu of any term or provision of this Agreement that is illegal, invalid or unenforceable, the parties in good faith shall supply as part of this Agreement a legal, valid and enforceable term or provision as similar to such illegal, invalid or unenforceable term or provision as may be possible.

IN WITNESS WHEREOF, the parties have caused the execution of this Agreement as of the date first written above.

**VIRGINIA NUTRIENT CREDIT EXCHANGE  
ASSOCIATION, INC.**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_  
**PARTICIPANT NAME**

By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

**ATTACHMENT A**

**ANNUAL FEE SCHEDULE**

<b><u>Class</u></b>	<b>Participant's Total TN WLA <u>(lbs/yr)</u></b>	<b>Mar. <u>2008</u></b>	<b>Nov. <u>2008</u></b>
Very Large	>400,000	\$1,750	\$3,500
Large	400,000- 75,001	\$1,250	\$2,500
Standard	75,000- 15,001	\$750	\$1,500
Small	≤15,000	\$250	\$500



**ANNUAL FEE SCHEDULE UPDATE  
(ISSUED: MAY 26, 2010)**

<b><u>Class</u></b>	<b><u>Participant's Total TN WLA (discharge lbs/yr)</u></b>	<b><u>Annual Fee</u></b>
Very Large	>400,000	\$4,250
Large	400,000-75,001	\$3,125
Standard	75,000-15,001	\$1,875
Small	≤15,000	\$625

## APPENDIX C

# Water Quality Improvement Fund



This appendix provides an update on funding from the Water Quality Improvement Fund (“WQIF”) for eligible point source nutrient removal technology upgrades. The 2016-2018 Budget appropriates \$59 million in Point Source WQIF funding to fully meet WQIF funding needs through June 30, 2018, as estimated by DEQ. No additional Point Source WQIF funds were included in the 2018-2020 Budget as enacted in 2018 due to the absence of an immediate need. For future projects, additional WQIF funding will be needed. The WQIF needs forecast should be updated during 2019 and any necessary additional appropriations planned for FY 2021.

**APPENDIX D**

**DEQ Director Letter**





# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219

Mailing address: P.O. Box 1105, Richmond, Virginia 23218

Fax (804) 698-4500 TDD (804) 698-4021

[www.deq.virginia.gov](http://www.deq.virginia.gov)

L. Preston Bryant, Jr.  
Secretary of Natural Resources

David K. Paylor  
Director

(804) 698-4000  
1-800-592-5482

September 12, 2007

Mr. Mark Haley  
President, Board of Governors  
Virginia Nutrient Credit Exchange Association, Inc.  
P.O. Box 51  
Richmond, VA 23218-0051

RE: Exchange Compliance Plan

Dear Mr. Haley:

I understand that the Exchange's July 31, 2007, Compliance Plan projects that expected Total Nitrogen and Total Phosphorus loads will be below the aggregate wasteload allocations in all five basins by 2011. You and the entire association are to be congratulated for your diligence in evaluating the best opportunities for upgrades and trading in each of the Chesapeake Bay basins so that we can retain the existing January 1, 2011, compliance date in the watershed general permit for both nitrogen and phosphorus. This is a significant step for the Exchange, the watershed general permit and trading program, and for the Commonwealth in our continued efforts to clean up the Bay and illustrates your commitment to being a strong partner in the solution.

We know it will be a challenge to complete so many projects on such a tight timeline, and we remain committed to working with you to shepherd these projects to completion. In the meantime, we appreciate the Exchange's efforts to encourage and facilitate the cooperation of over 100 facilities to reduce nutrient loads to the Chesapeake Bay.

Thank you for your commitment to maintaining healthy waters within Virginia.

Sincerely,

A handwritten signature in black ink, appearing to read "David K. Paylor", written over a horizontal line.

David K. Paylor

DKP:dln